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July 1981/$2.00

WEEDS TREES & TURF

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Performance Bonds and Penalty Clauses

1980 Residential Landscape Award Winners

Turf Renovation After Extended Drought

ISSN 0043-1753

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WEEDS TREES & TURF (ISSN 0043-1753) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 757 Third Avenue, New York, New York 10017. Advertising offices: 757 Third Avenue, New York, New York 10017, 111 East Wacker Drive, Chicago, Illinois 60601 and 3091 Maple Drive, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $15 per year in the United States and Canada. All other countries: $40 per year. Single copies: $2 in the United States and Canada; all other countries: $4.50. Controlled circulation postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright ©1981 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.
POSTMASTER: Send address changes to WEEDS TREES & TURF, P.O. Box 6198, Duluth, Minnesota 55806.

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Cover: Heavy-duty spreader is a fast way to topdress a large area in a short amount of time. Photo courtesy Lely Corp.

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OUTLOOK

By Bruce F. Shank, Editor

Associations, Manufacturers Wrestle With Segmentation

Regional landscape-related shows have been outdrawing many national shows and this is discouraging to national associations trying to build larger memberships and to gain more support from manufacturers at their shows. Manufacturers, trying to get the most out of their show budgets, are also torn between regional and national shows.

Apparently, segmentation has not only increased among the various landscape markets, but regional segmentation is growing. Most recent examples are the lawn care show in Memphis, and the regional nursery and landscape shows in California, Florida, Texas, Ohio, and the Northwest. Some of these shows are drawing thousands of attendants and hundreds of exhibitors while national shows attract perhaps 30 exhibitors and 400 attendants. Obviously, the GCSAA show is an exception.

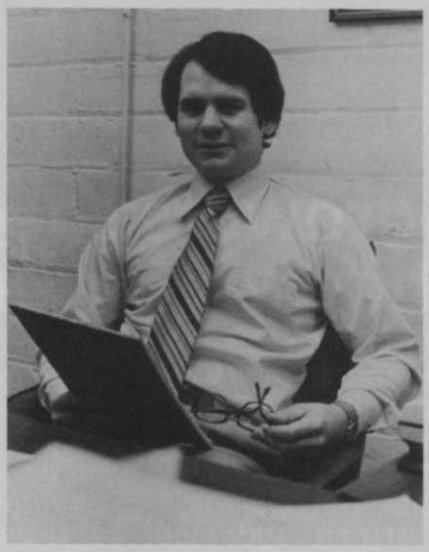
Manufacturers are adjusting marketing efforts to this segmentation although their marketing budgets may not increase accordingly. 1981 has been a year of change for many Green Industry suppliers in regard to marketing.

I've spent most of my time the past five weeks visiting associations and manufacturers. The subject of shows was on the minds of both groups. Many manufacturers are relying on regional shows. Chemical companies selling products under Special Local Needs labels may pull out all stops for particular regional shows. However, with these exceptions, manufacturers would prefer to concentrate on national shows.

Chemical makers with limited production, especially manufacturers of preemergence herbicides, find it convenient to sell basic chemicals to large regional distributors for reformulation and marketing. Equipment manufacturers, aware of weaknesses in depressed regions, direct marketing efforts at growth regions and assist distributors in those regions. Clearly recession has encouraged segmentation. As a result, regional associations are receiving more support from national manufacturers.

Meanwhile, national associations are strongly opposed to further segmentation on the national level. Groups that have developed in the last two years, the Professional Lawn Care Association of America and the Interior Plantscape Association, have irked the officials of existing national associations.

Some national associations have chosen to reduce services in light of economic conditions. Others are



sharing resources to provide member services. The Interior Plantscape Association and the Interior Landscape Division of the Associated Landscape Contractors of America met in May to discuss areas of duplication in service and to plan for future cooperation. The American Institute of Landscape Architects is currently voting on the issue of joining with the American Society of Landscape Architects.

The concern is most obvious when regional groups attempt to become national. A recent case is the announcement by the California Landscape Contractors' Association that it has changed the name of its Landscape Industry Show to National Landscape Industry Show for 1982. I can understand 'Southwest Landscape Industry Show,' but 'national' makes show organizers look somewhat bigheaded. Granted California is probably the biggest market, but the regional association should make an effort to be more cooperative on a national scale.

I just feel that regional groups should remember their roots. There are many things that depend upon national impact which regional groups can't supply by themselves. These include lobbying for and against Federal legislation, financial support of needed research, and supplying national data to support the registration of needed chemicals and the development of needed equipment. Believe me, manufacturers and government officials won't accept a person's word anymore. They need proof before they act. One regional group may influence two senators and a few congressmen, but that won't get a Federal bill passed. It takes national effort to influence Federal legislation and product decisions by national manufacturers.

Segmentation is justified only by changes in the market. Since the onset of recession changes have been minimal with the biggest shift toward sunbelt cities. Cooperation and consolidation, where practical are needed to maintain integrity and a healthy level of growth.

Nursery Business Up in Midwest, Northeast

Drought and insects have taken their toll and homeowners and professionals are buying plant material in dramatically improved volumes, report nurserymen in the Midwest and Northeast. Homeowners are making the decision to fix up what they have rather than buy new homes with 16 percent mortgage rates. Perhaps there is also new awareness of the energy benefits of landscaping. We'll get specific information on the first two quarters of 1981 and pass it on as soon as possible.

WTT

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*Apply Roundup to fairway; reseed 7 days after application. While Roundup goes to work, golfers keep playing over treated turf. RUP-SP1-113D

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GREEN INDUSTRY NEWS

California landscape show will go national in 1982

After the tremendous success of this year's Landscape Industry Show — 6,150 attendees and 200 exhibitors from all over the U.S. and overseas — the Calfornia Landscape Contractors Association has decided to make the 1982 show national. The 1982 show will be called the National Landscape Industry Show.

The 6,150 people attending the show, an increase of 23 percent over the 1980 attendance, included 2,660 registered as contractors. Hundreds of others registered as architects, designers, maintenance personnel, and parks/recreation personnel from various city, county, and state agencies.

The 200-plus exhibitors from the U.S. and Britain covered the entire exhibition hall of the Long Beach Convention Center. They represented plant materials, spas, financial services, light and heavy equipment, insurance services, irrigation and landscape supplies, decorative supplies, tools, and communication services.

During the final day of the show, exhibitors signed up for 71 percent of the space that is available for the 1982 National Landscape Industry Show, scheduled for April 29-May 1 at the Long Beach Convention Center. An expansion of the exhibiting time to three days should allow more opportunity to travel and shop the floor.

This year's show opened with a ribbon cutting ceremony by Long Beach Mayor Eunice Sato assisted by committee representatives from the California Landscape Contractors Association who sponsored the show. The opening night, March 26th, was highlighted by the upbeat sounds of the wandering Mariachi Band.

On Friday morning those who were judged to have the most appealing exhibits were awarded trophies. The winners were: Stone-Age Creations of Orange, CA, in the 10x10 booth category; Hydro-Dig, Inc. of Anaheim for the 10x20 booth category; and C & E Lumber, L & S Stakes, and Nightscaping for combining on the 20x20 booth for the second straight year. Marlin Industries of Huntington Beach, CA, won the open space category.

For information on the new National Landscape Industry Show, contact David Concannon at the CLCA headquarters, 1419 21st St., Sacramento, CA 95814, 916/448-2522.

Officers and directors of the American Society of Consulting Arborists selected for 1981-82 are: front row (l. to r.) Jack Kimmel, Ontario, Canada-secretary-treasurer; Arnold Webster, Iowa-vice president; John Duling, Indiana-immediate past president; Edwin Irish, Michigan-president-elect. Back row: Jack Siebenthaler, Florida-director; Edward Collins, New York-director; William Griffin, California-president; Erik Haupt, Massachusetts-director; and Kenneth Funk, Ohio-director. Dr. Spencer Davis (not shown) was reappointed executive director.

PESTS

Budworm outbreak hits 143 million acres

The current outbreak of eastern spruce budworm, now in its seventh year, exceeds 143 million acres in the United States and Canada, according to Dr. David Thorud, director of the Northeastern Forest Experiment Station, USDA Forest Service.

Losses of spruce and fir timber are conservatively estimated to be 7.8 billion cubic feet, Thorud said. Recent research by the Canadian Forestry Service indicates that even if the outbreak were to collapse now, losses from the death of weakened trees may still triple in the next three to five years.

Two approaches are currently used to cope with the pest: aerial application of chemical and biological pesticides to protect trees; and expanded salvage efforts. A demonstration project in Maine led by station scientist D. Gordon Mott, University of Maine scientist John Dimond, and a project management group composed of industrial, private land, and state forest managers, showed that if pesticides are applied in conjunction with harvesting substantial savings can result. Pest managers in Maine saved more than two million dollars in 1980 by applying these principles, said Thorud.

The Canada-United States Spruce Budworms Research and Development Program (CANUSA) sponsors the project. The U.S. and Canadian forestry agencies conduct their own research and the Northeastern Station, which administers the eastern CANUSA program, sponsors a competitive grants program. Since the program started in 1978, a total of 46 investigations have been initiated at 16 universities, according to Thorud.

CHEMICALS

Mobay launches group with 2 new products

The Agricultural Chemicals Division of Mobay Chemical Corporation has announced the formation of the Specialty Chemicals Divison to direct the promotion and distribution of two new products, Bayleton systemic turf fungicide and Oftenol insecticide for white grubs. These new products will be combined with the company's Dylox, Sencor, Baygon, and Dasanit to serve the professional turf market.

Bayleton is a newly released fungicide for turf and ornamentals which has the advantage of extended control periods, up to 28 days. This length of time is more in line with routing for lawn care and landscape contracting firms. Researchers have recognized that fusarium blight control is high. The wettable powder should now be arriving at distributors.

FALCON

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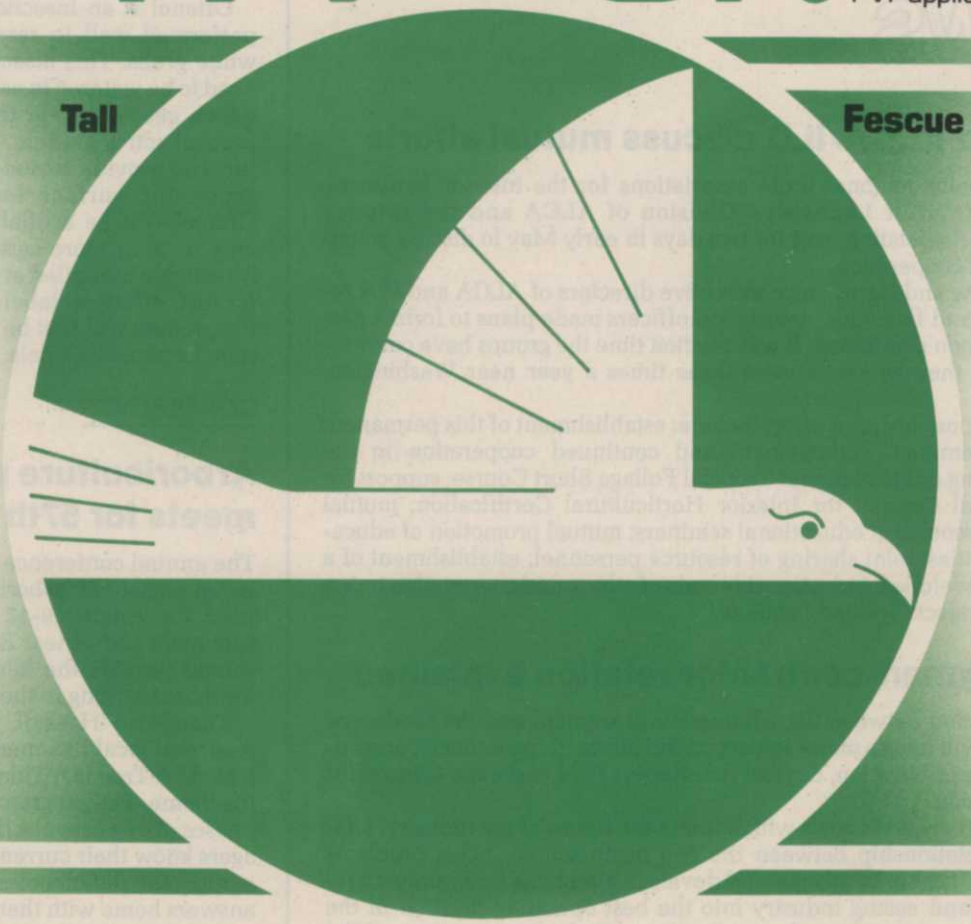

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LANDSCAPE CONTRACTOR NEWS

IPA and ALCA/ILD discuss mutual efforts

The two major national trade associations for the interior landscape field, the Interior Landscape Division of ALCA and the Interior Plantscape Association, met for two days in early May to discuss potential areas of cooperation.

John Shaw and Carol Felix, executive directors of ALCA and IPA respectively, and five other association officers made plans to form a permanent liaison committee. It was the first time the groups have come together and they will now meet three times a year near Washington, D.C.

Areas of possible joint effort include: establishment of this permanent liaison committee; endorsement and continued cooperation in the programming of the National Tropical Foliage Short Course; support for the National Council for Interior Horticultural Certification; mutual member discounts at educational seminars; mutual promotion of educational activities; joint sharing of resource personnel; establishment of a mutually developed, industry wide code of ethics; and cooperation on association projects and publications.

Nurseryman-contractor relation explained

The interaction between the wholesale nurseryman and the landscape contractor will have a major impact on the future of the industry, according to a new publication, *Crystal Ball Report IV: Landscape Contractor & Nurseryman.*

The report gives six goals which frame the future of the industry, analyzes the relationship between the two businessmen, notes problems seen in relationship by groups, and develops directions for improving relationships and easing industry into the best operating position in the future. The Associated Landscape Contractors of America prepared the report with the assistance of the American Association of Nurserymen. Copies are $10 each from ALCA, 1750 Old Meadow Road, McLean, VA 22102.

Milwaukee Technical wins student field day

With the home field advantage, Milwaukee Area Technical College defeated five other schools at the fifth annual ALCA Field Day held in early April. The students of the two-year program also did a fine job of organizing and running the event.

Mississippi State ran second in the competition and Ohio State took third. Oklahoma State, Michigan State, and Ohio Agricultural Technical Institute also competed. For its victory, MATC received a plaque and traveling trophy, which it retains until next year's event.

The competition included a landscape design problem, cut and fill estimating, maintenance estimating, small engine troubleshooting, indoor plant identification, woody plant identification, rope and saddle tree climbing, a dump truck obstacle course, landscape construction, Bobcat operation, and mower operation. Jim Bakke was student chairman and John Schaefgen was faculty advisor to the student club.

First joint show held in North Carolina

Nurserymen, landscape contractors, and landscape architects got together for the first time in Charlotte, NC, to discuss mutual challenges of the future. The event attracted nearly 1,000 businessmen and 140 exhibitors in an astonishing first effort.

News *from page 8*

Oftenol is an insecticide which has performed well in research trials for white grubs. This insecticide does not need to be watered in as do insecticides which get tied up in thatch. The five percent active granule applied in mid-July can provide season-long control of grubs and surface feeding insects. Oftenol will be available in July and only in 20 or more eastern states. The insecticide is applied at 40 lbs. per acre for turf. A federal label is pending and the product will first be labelled under state local needs labels.

CONFERENCE

Arboriculture society meets for 57th annual

The annual conference of the International Society of Arboriculture, scheduled for August 9-12 at the Boyne Mountain Lodge near Boyne Falls, MI, should provide the latest information for those working in the profession.

Theodeore Haskell, general chairman, and local ISA members, have selected "A Tree ISA Thing of Beauty" as the theme. The program will update all phases of tree care at a time when managers know their current problems and equipment deficiencies and can take answers home with them.

A large array of commercial products and equipment for the tree care industry will be displayed and demonstrated. Educators and researchers will hold a concurrent meeting to exchange views on current education and research programs. Top-rated tree climbers throughout the U.S. and Canada will compete in the sixth annual jamboree contest.

For more information, contact: E. C. Bundy, ISA Office, P.O. Box 71, Urbana, IL 61801.

UNIVERSITY

Virginia Tech names Fretz as hort head

Thomas Fretz has been chosen to head the Virginia Tech Department of Horticulture. He assumes responsibilities from C.L. McCombs, who has served as department head since 1971.

Fretz begins his role at Virginia after heading the horticulture department at Kansas State University since 1979 and, previous to that, serving as associate professor at Ohio State University. He has been editor and publications chair-

man for the American Society for Horticulture.

Fretz received his undergraduate degree in agriculture from the University of Maryland in 1964. He achieved his master's and doctorate at the University of Delaware.

NEW GROUP

Wisconsin organizes turfgrass association

The Wisconsin Turfgrass Association, which held its organizational meeting last fall, has set its first aim at establishing a more comprehensive research turf program specifically for Wisconsin growing conditions and problems.

Plans are underway to work closely with the University of Wisconsin, School of Agriculture, to upgrade turfgrass research in the State of Wisconsin. Dr. Gayle Worf, University of Wisconsin extension plant pathologist, has agreed to organize the initial research efforts.

Initial members represent sod production, golf course maintenance, landscape contracting, lawn care, and other allied turf fields. Membership is open to any person or organization interested in improving Wisconsin's turfgrass program.

For information and applications, contact Tom Harrison, 1218 Winn Trail, Madison, WI 53704.

NEW GROUP

Massachusetts forms forum for pesticides

A forum of people interested in a rational approach to pesticides has organized in the state of Massachusetts to disseminate accurate, unbiased information to the public.

Members of the group, Rational Approach to Pesticides, are involved in the everyday application or distribution of pesticides for protection against insects, rodents, diseases, weeds, and nematodes. Officers are planning to discuss their goals with the state's governor and other legislators.

The following state associations are members of R.A.P.: Associated Landscape Contractors, Golf Course Superintendents Association, Arborist Association, Association of Professional Foresters, Farm Bureau Federation,

Continues on page 51

GOVERNMENT UPDATE

Gorsuch Gets Nod for Top EPA Post

Despite early grumbling that Colorado lawyer Anne Gorsuch was not qualified or sensitive to the environmental cause, both Houses unanimously approved her nomination as well as the nomination of her deputy John Hernandez.

EPA insiders believe Gorsuch will direct a total reorganization of the agency and say she is greatly influenced by Secretary of the Interior James Watt, who has already established a record scorned by some environmentalists.

Responding to questions from the Senate Committee on Environment and Public Works, Gorsuch said she was committed to regulatory reform, finding the least costly options, giving states more of the responsibility and more incentive, and changing the image that EPA employees are "mad environmentalists."

Hernandez, a former dean of the New Mexico State University College of Engineering, also stressed increased environmental enforcement by states. He pointed out that the agency has highly qualified people who have too often been rushed to make determinations on scientific matters, thus wasting the agency's money and making decisions without adequate consideration of their economic impact.

NAA, PLCAA to assist in EPA urban study

The Environmental Protection Agency has solicited the assistance of the National Arborist Association and the Professional Lawn Care Association of America in a survey of urban pesticide usage. The associations will help in development of the questionnaire for the survey and their members may then be asked to participate in the confidential survey.

According to NAA, the data from the survey will be used for risk/benefit analysis, environmental monitoring, and improved registration and enforcement procedures. NAA also sent out a special mailing to members stressing the seriousness of following label guidelines and taking needed precautions to guard contamination of water, bird feeders, dog dishes, children's toys, and adjacent property. NAA must be communicating the signals it is getting from EPA.

Year extension of FIFRA likely at $62 million

Both the House Agriculture Committee and the Senate Subcommittee on Agricultural Research and General Legislation are expected to approve legislation extending the Federal Insecticide Fungicide and Rodenticide Act to 1983 and extending the existence of the Scientific Advisory Panel to 1985.

Rep. Fithian (D-IN) voiced the need for additional funding to support states in applicator recertification and to maintain the current level of pesticide registration decisions. The one year program extension indicates a review of FIFRA implementation by EPA will take place before further funding is approved. The House bill has passed committee and the Senate bill will enter hearings this summer.

Elanco aquatic control has permit extended

An aquatic herbicide containing fluridone has received an extension for its experimental use permit from the Environmental Protection Agency according to Elanco. Tolerances for fluridone residue in fish have been established so fish from the test lakes can be consumed.

New fungicide enters registration process

Ciba Geigy Corp. has submitted an application to register TILT 3.6E, a member of the triazole family of fungicides, for rusts and powdery mildew in grasses grown for seed. This use is often a preliminary step to registration for turf uses. Ciba Geigy has been working on fungicides for extended control in turf. Bayleton by Mobay was recently labelled for 28-day control of diseases in turf.

STANDARD RECOMMENDATIONS AND SHORTCUTS ARE TESTED BY DROUGHT

By Bruce F. Shank, Editor

The landscape professional has been working in drought conditions for more than a year now. He has adjusted maintenance programs and made changes in his recommendations to show customers that landscapes need not be sacrificed when availability of water is reduced.

Drought has tested his skill and forced him to realize that the future will present challenges requiring a thorough knowledge of horticulture to solve. Drought, reduced maintenance, and energy conservation are just a few of the challenges to be faced in the 80's.

Renovation of drought damaged turf and landscapes this late summer and fall should reflect the experience gained with drought and anticipate the needs of the future. Showing the customer you can protect him from future disasters will be important.

Drought basically taught us that standard recommendations and a few accepted shortcuts allow little protection when water gets short. Typical shortcuts, such as poor grading and seedbed preparation, use of cheaper varieties of turf seed, inadequate irrigation, and minimal care after installation can be blamed for serious turf losses. At the same time, dependence on exotic turfgrasses, excessive irrigation, overfertilization, and mowing for carpet-like appearance have brought the same losses. The money shortcuts saved could have prevented the need for renovation now. The extra money spent on trying to be special has been lost.

Renovation ought to be a significant market this coming fall and spring.

Obviously, we can not return to unmowed fields of native grasses and sheep. Landscapes must be functional as well as attractive. We can, however, apply what we know to be true and refuse to make shortcuts. The landscape architect, sod producer, and landscape contractor must resist shortcuts to get lower bids. The grading has to be right. The seedbed has to be properly worked, amended, and fertilized. Irrigation should be included in any fine turf area. The sod grower should supply improved varieties and the seeding contractor's seed mix and rates should be carefully scrutinized. Followup fertilization and weed control should be strongly advised to the customer. Sensible irrigation and mowing schedules should be recommended.

Renovation ought to be a significant market this year. The value of a knowledgeable contractor will hopefully be recognized by those that lost their lawns. The contractor can improve the customer's lawn as he restores it. The importance of rootzone, turfgrass variety, proper irrigation and mowing, and chemical maintenance can be taught to a new group of customers. Approach renovation from the standpoint of turfgrass and its environment. Offer the periodic services which customers find inconvenient, including aerification, soil testing, thatching, fertilization, weed and insect control. Educate them to their role in mowing at proper heights and irrigation only when needed. Get the customer interested in his lawn once again.

Drought: Causes and Effects

Drought damage to turfgrass occurs when the cell walls remain rigid while the cell contents dehydrate and contract. This stress eventually causes death of the cell. Grasses have natural reactions to drought stress most commonly evident as summer dormancy where all but a few buds in the crowns, stolons, or rhizomes die. The dead leaf tissue helps insulate the live cells from further damage. Kentucky bluegrass and bermudagrass are recognized as good recoverers from dormancy. Annual grasses may seed prior to summer drought for fall germination.

Certain conditions can encourage drought damage. These include poor rootzones (pH, texture, lack of potassium); overfertilization with nitrogen, causing too much foliage growth; mowing too low; exposure to dry winds; steep slopes; and turfgrasses with poor rooting characteristics.

Warm season grasses such as bermudagrass, zoysiagrass, and bahiagrass have developed natural characteristics to survive drought and high temperatures. Use of these grasses north of the transition zone, however, is not very practical. Cool season grasses such as hard, tall, and red fescue exhibit good drought tolerance. Improved varieties of tall and hard fescues offer the greatest hope for low maintenance in the north if cold hardiness can be achieved.

These grasses possess water conserving characteristics. The roots are deep, aggressive, and well-branched. Root hair zones are well-developed. They also retain moisture with thick, waxy surfaces and folding or rolling leaves, and have very small plant cells which resist dehydration stress.

Creeping bentgrass, rough bluegrass, and centipede are not drought resistant. Perennial ryegrasses are not as tolerant as Kentucky bluegrass.

Continues on page 16

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Shortcuts *from page 14*

Summer drought stress is a natural phenomenon which will not cause permanent damage to the turf providing there is adequate fall moisture for recovery. However, if drought continues into the fall and the still dormant turf enters winter, permanent damage can occur.

Distribution of components in polystands will change in favor of the fescues.

Polystands of Kentucky bluegrass, red fescue, and perennial ryegrass become primarily red fescue. The desired bluegrass or ryegrass will probably not be present or distributed in the turf in the desired way the following year. The turf will appear thin and dead grass will be evident throughout. If drought continues, even the fescue will not creep to replace the bluegrass and ryegrass. Sod takes longer to transplant.

This is the state of millions of lawns in the Northeast. Improved spring rainfall and proper fertilization will not bring the typical recovery property owners expect after summer dormancy. Water rationing is still enforced in sections of New Jersey. Many homeowners are doubtful that irrigation water will be in adequate supply in the future. They will hesitate to invest in turfgrasses which require irrigation for proper maintenance.

Drought Maintenance

Beside the inherent nature of some turfgrasses to withstand drought, certain steps can be taken to reduce stress. Mowing height should be raised to encourage deeper rooting. Soil tests should be performed to establish any deficiencies in potassium, phosphorus, and minor elements. Only needed amounts of nitrogen should be applied. Irrigation should be less frequent but thorough and concentrated to desired areas. Aerify to help water infiltration and improve soil air content. Application of wetting agents may be worthwhile to get more benefit out of limited water. Try to restrict traffic in turf areas.

Recovery and Renovation

Many regions of the U.S. have had to think little about water until the past year. West Coast property owners have lived with water shortages for many years and have set standards accordingly. Turf areas are assigned a priority. High priority areas receive irrigation, extra attention to rootzone, and improved sod. Remaining areas are planned and constructed for low maintenance and cost. Priority setting could be one way of making proper renovation attractive in the East and Midwest.

This way a property owner can retain the pleasure of an attractive lawn while doing his

part to conserve water. Since loss and permanent damage of some shrubs and ornamentals is also likely, the priority plan assures that all desired plants will be protected while secondary landscaping is designed for low maintenance. It shows the customer that the landscape professional has options not previously well-known.

Once priority has been established, the appropriate work and material can be determined. The turf environment should be considered first. Soil tests should be made. Drainage, soil texture, exposure to sun and wind, slope, and the remaining grass should be evaluated. Corrective measures should be evaluated for both high and low maintenance areas.

A good low maintenance Kentucky bluegrass or fescue should be selected for low maintenance areas. Chemical renovation with glyphosate (Roundup), thatch removal, and mowing prior to seeding will provide the best turfgrass stand. Any soil nutrient deficiencies should be corrected prior to seeding.

Once established, the low maintenance areas should receive only the care needed to prevent weed encroachment.

Improved rainfall and fertilization will not bring about typical recovery from summer dormancy due to drought.

High priority areas should offer control of the turf and its environment. Irrigation should be possible. The rootzone should be amended to a depth of four inches. Nutrient, organic content, and water repellent properties should be solved.

These areas should receive top quality sod or seed. All progress in turfgrass breeding should be applied to the situation. Aggressive, disease resistance, and drought tolerant turfgrass should be selected.

After establishment, this area should be maintained for appearance without excessive growth. The idea is not to splurge, but to protect the high priority areas from future crises. **WTT**

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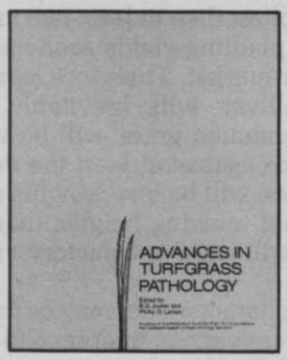

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CONSIDER NEW TURF CULTIVARS FOR POST-DROUGHT RENOVATION

By Robert W. Schery, Director, The Lawn Institute, Marysville, Ohio

All new cultivars have favorable basic characteristics, or the expense of bringing them to market would not have been undertaken. Typically it requires several years to test a cultivar and build up foundation seed supplies; then at least two more years before a field planting yields economical quantities of seed for market. Therefore, almost any proprietary cultivar will inevitably be better-looking than common grass, will be well screened for tolerance against at least the more commonplace diseases, will be low-growing and thus denser at normal mowing heights than is common grass, and will show satisfactory vigor and adaptability.

Beyond this, other characteristics may be more individualized—aggressiveness, tolerance to extreme acidity or alkalinity, response to treatments (such as phytotoxicity from pesticides), compatibility, thatch formation (related to aggressiveness), tolerance to insects, mowing neatness, wearability, richness of color, resistance to smog, and so on. But remember that cultivar ratings reflect conditions of the moment, in a particular area, under a certain regimen. Disease virulence is largely a matter of coincidence. And different experts have differing likes and expectations! Thus it is not surprising that a cultivar is seldom top choice everywhere, or even at a given location two years running. Were I to characterize even just the Variety Review Board cultivars here, a dreary recitation would be needed spilling over many pages, noting qualifications and exceptions. It is just not possible to give an unqualified endorsement; yet, any cultivar is capable of first-rate performance if influences are reasonably favorable.

Seldom is a cultivar top choice everywhere, or even at a given location two years in a row.

However, a few generalizations seem valid that may offer guidance for choosing lawnseed:

1. Often discoveries from nature, having been exposed to the rigors of natural selection, adapt a bit better to neglect than do highly bred choices. On the VRB list, domestic adventives such as Arboretum, Glade, Merit, Nugget, Plush, and Vantage lean this way, as do certain cultivars introduced from Europe (e.g. Baron, Fylking). Park and Kenblue represent common-type naturalized bluegrass populations from Minnesota and Kentucky respectively, but beware of unspecified common bluegrass since it is often high-yielding Newport, an older cultivar without many fine-turf qualities.

2. No turfgrass, even a fescue, is at its best without some fertilization. A feeding rate of two pounds elemental nitrogen per thousand square feet annually as part of a complete fertilizer should be roughly the ecological breaking point on most soils for stimulating grass dominance over competing forbs (weeds). Complete neglect risks thin, weedy turf, no matter the cultivars chosen.

3. Vigor and density are energy-saving attributes in that they enable the turfgrass to compete well, crowd weeds, and depend less on pesticides. Most domestic hybrids such as Adelphi, America, Bonnieblue, and Majestic are of this ilk, as is Enmundi from Europe. They have generally been proven out under fertilization; they may or may not do well underfertilized. Chosen for outstanding performance on golf courses or athletic fields, which are generally reasonably well tended, are such notables as Merion, Ram I, and Touchdown, and Birka and Sydsport from Europe. The more vigorous of these cultivars may thatch a bit if earthworms and microorganisms cannot cope with heavy inputs of vegetation under your environmental circumstances. Incidentally, lawn clippings increase thatch very little; they consist of succulent tissue quickly decomposed. However, fast-growing turfgrasses are likely to require mowing a bit more frequently, an energy-related factor to be considered.

4. Differences between the perennial ryegrass cultivars are not so apparent, and most of the cultivars can be utilized interchangeably. Citation, Diplomat, Omega, and Yorktown II seem to be relatively nonaggressive, but the ryegrass component in turfseed mixtures is nonetheless best held to about 20% lest slower-starting bluegrass be repressed. Almost all of the recent ryegrass releases have tolerable winter hardiness, Manhattan and NK-200 being acknowledged for suitability even in more northerly regions. Pennfine and Regal get good marks for hot weather durability. Derby rates highly, and like Blazer and Fiesta enjoys quite a winterseeding usage on dormant bermuda in the South.

5. Chewings fescue cultivars are very handsome in favorable locations, but often become irregularly clumpy in hot-humid weather. They may disperse less comfortably in a bluegrass matrix than does ryegrass. Fine fescues are a poor-soil grass, often colonizing dry areas under trees receiving little or no fertilization, and enduring

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well-drained sandy soil outcrops. Cultivar differences are less marked than with bluegrasses.

6. Slight differences are noted among bluegrass cultivars in ability to hold up with little or no summer watering, Arboretum being a case in point. Under eastern conditions, Bonnieblue, Enmundi, Glade, Nugget, Plush, and Ram I have all endured greater acidity than most; on alkaline soils in Colorado, Adelphi, Baron, Fylking, Ram I, and Sydsport have remained non-chlorotic. Differences of such nature are not great, however, and are often overshadowed by maintenance and climatic variables. Normally, east of the Mississippi irrigation is not necessary for turfgrass survival, although, (obviously) during dry spells a lawn will look prettier if watered. In the arid Southwest, however, turf is not possible at all without irrigation. Generally fescues are considered more tolerant of drought than bluegrasses, bluegrasses more drought-tolerant than ryegrasses. Some summers in Ohio have reversed these expectations, with perennial ryegrasses staying green and attractive longest without any watering.

Drought damage offers the opportunity to introduce newer, pedigreed cultivars.

It is apparent that one can't prescribe with confidence the "best" turfgrass species, or cultivars of that species, since so much depends upon user preferences, location, level of care, and so on. Fescues are perhaps best adapted to minimal fertilization, but much depends upon native fertility of the soil and other influences. Most bluegrasses and ryegrasses get along quite well at modest levels of fertility, Merion and other vigorous cultivars being more demanding. Weeding requirements are usually reduced by fertilization, since nitrogen encourages grass at the expense of broadleaf weeds. Vigorous grass, encouraged by autumn feeding, provides a good base, but additional weed clean-up will be needed occasionally (as with selective phenoxy herbicides such as 2,4-D, or crabgrass preventers).

Pest control measures for insects and especially diseases are most effectively handled by establishing natural balances and by planting resistant cultivars. A typical homeowner is not equipped to diagnose lawn disease, nor to apply proper fungicides accurately. Fortunately, most modern cultivars are remarkably tolerant of disease, especially when several are blended together in the lawn population. Changes of weather or season lend a big assist. Knowledge of insect resistance is not so far along, although resistance to such things as sod webworm and other pests seems to vary among cultivars. An insecticidal drench may occasionally be necessary if one's lawn becomes severely infested, but minimization of damage can usually be achieved by encouraging predators of the pest insects. This idea has perhaps been most successfully explored in Florida, although the possibilities would seem promising anywhere.

In spite of a homeowner's best efforts, calamities occasionally will occur. Such was the case in 1980, with the extreme weather over much of the eastern half of the nation. From Texas through Missouri to Minnesota record heat and drought wiped out many lawns, as also occurred along the eastern seaboard where, autumn refreshment did not come sufficiently soon to allow repairs in 1980. Yet in Ohio, inordinate rainfall in early August kept soil waterlogged and "drowned out" much vegetation before drought set in through September. Lawns in such areas may call for repair, which offers opportunity to introduce newer, pedigreed cultivars perhaps a bit better suited for lawns than the mixed assortment previously had. It is possible in these days of knockdown chemicals (glyphosate, for example), to free a lawn of remaining unwanted vegetation before seeding. Then scarify the surface mechanically (use powered scarifiers or turf seeders for large areas) before spreading seed and following customary cultural practices. If the timing is questionable and patching imperative, consider the fast-starting perennial ryegrasses; well-seated, they will provide incipient cover with just a few days of warm, moist weather.

Whether or not the United States will continue to direct as much attention toward its lawns as in the past, in the face of mounting national contingencies, remains to be seen. Almost nowhere else in the world has lawn making so flourished. In Europe many houses traditionally have been built flush with the street, eliminating front yards. With a dense population for centuries, little space could be accorded plantings that were decorative only (the backyards are mostly utilized for vegetable gardens and for fruit production). But in the United States, spacious home grounds are still the norm, except, perhaps, in congested metropolitan centers. The cost of land has now increased, however, to a point where new housing often entails small lawns or communal grounds such as those of the condominium.

Yet, it will be a long while before the spacious suburban home is a thing of the past, and the most efficient way to accommodate it to the landscape is with a lawn, hopefully one requiring minimal bother and cost. But, as was noted earlier, no form of vegetation is without care and some prob-

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SIX FIRMS CAPTURE AWARDS FOR RESIDENTIAL DESIGNS IN 1981

By John Kerr, Associate Editor

As sophistication and diversity of landscape design grow, homeowners seek quality scenery around their home. Rising property values and construction costs make the cost of quality landscapes a value in relation to the total cost of home ownership. Although aware of this value, homeowners often don't realize the challenge integrating modern styles with natural surroundings.

This year's residential landscape design award winners show that designers have kept pace with modern styles and demands of homeowners while respecting the environment. Some of the conversion jobs are barely recognizable through before and after pictures. Landscapes of new homes exemplify the skill in relating plant materials and structures to the appearance of modern construction.

Amidst the demands from homeowners arise limits on spending. Residential landscapes frequently exceed $5,000 and construction materials are not getting cheaper. Factoring cost into the landscape means judicious selection of plants for beauty and low maintenance.

What follows demonstrates the challenges and solutions residential landscape designers found for their award-winning projects. The National Landscape Association awarded six residential designs for top work in the field of residential landscaping at this year's Landscape/Garden Center Management Clinic in Louisville. One of these winners also grabbed the grand award for residential landscaping contracting given by the Associated Landscape Contractors of America at their annual meeting in New Orleans.

Sterling Landscape Company, Boise, ID
Site: Boise, Idaho
Award: Single Family Residence

The owners of this long piece of property entertain heavily and needed a parking space and an attractive outdoor-indoor relationship for their guests. They also wanted privacy from their neighbors and the traffic of a country road while maintaining a panoramic vista of the Boise mountain range.

Sterling built up and established a back yard with fill and topsoil. An area for entertainment was designed and constructed along with a smaller patio area and a patio outside the master bedroom. By use of paths that were heavily surrounded with plants, the designer created small areas for different purposes. "Compartmentalization of all the spaces made it exciting," says John Sterling. "People experienced different spaces like they were walking into rooms."

Sterling — Compartmentalization makes this Boise residence an entertaining setting.

To show a long look from the front of the house, both sides of the entry drive were planted with matching trees, such as Bradford pear, evergreens, and pines touched off with flowering trees, including Eastern Redbud and Washington Hawthorn for lots of color.

The designer grouped Redtwig Dogwood and Shoebutton Spirea coming out of Buffalo Juniper. He planted masses of day lillies and malcomia. In the back, flowering almond (3 to 4 feet) were placed along with Japanese Maple and Lodgepole Pine.

Bowmanite treatment of concrete surfaces extends all the way around the entry drive and approach to the front door. All the surfaces were accented with this. The stone used for the landscape was the same as that used for the home and helps unify the structure. Attractive pillars shed light onto the driveway. The heavy chain downspouts manipulate surface runoff in an imaginative way.

This site also won an award of distinction from ALCA for residential design and an award from the American Institute of Architects.

Steven Dubner Landscaping, Dix Hills, NY
Site: Dix Hills, New York
Award: Active Use Area

A steep incline in the back that sloped into the surrounding woodland made building an expansive entertainment and pool complex on this site a difficult task. Dubner did all the masonry, carpentry, and landscaping to design a multi-level area with decks. It was necessary to sculpture the land and recontour the whole property. The pool was built on one level and a cantilevered deck at the deep end of the pool provided a view of the surrounding area.

Dubner — Steep lot presented challenges of a pool and low maintenance material.

Vista — New touches for an older site gives larger appearance.

The interior of the house is very contemporary and the design of the landscape had to fit this. All the natural tones of the floor and inside of the house were matched through brick pavers and wood decking outside.

To keep the site low maintenance, Dubner used lots of ground covers, mulching agents, and hardy plant materials native to this Long Island setting. He also analyzed location of all the existing trees on the site so when he created the multi levels he could preserve as many trees as possible.

The judges of this project said the interlocking squares and rectangles of the decked and paved surfaces create a simple elegance in the project that handily accommodates and invites the flow of activity from the house down to the pool. The birches at the top and bottom of the steps are valuable as specimen plantings and for their function as pivots for the turns required by the steps.

"We ended with a contemporary entertaining area with a natural area surrounding it," says Dubner. "The key was we transferred difficult terrain to something that's aesthetic and functional." This project also won ALCA's grand award for residential landscaping contracting.

Vista Landscaping, Inc. Orlando, FL
Site: Orlando, Florida
Award: Passive Use Area

The middle-aged couple in this older neighborhood of Orlando are private people and like to entertain. They desired an enlarged patio and development of a back yard for viewing and entertaining.

This site is a good example of the introduction of new materials into an established surrounding. Wayne Hardy, who was in charge of the project, enlarged the patio with old bricks as pavers; added a wood trellis to the patio which enhances the natural feel of the area; and put in wood fencing for additional privacy. The tones in the old brick matched the wooded character of the house. The trellis was made of cypress, which ages naturally.

Since there was only small access to the back yard, all the plant materials had to be carried in by hand. Plants were chosen for seasonal color and variety of texture, keeping in mind that the growing season in this part of Florida is 10 months. Use of ground covers such as liriope make the yard easy to maintain and holly ferns provide a woody feel. A flowering bottlebrush tree was added for color. All the planting was done with a sense of the mature oak stands in the neighboring yards which creates a sense of enclosure. The apparent size of the yard has been dramatically increased through the placement of plant masses.

Bunch Nurseries, Inc. Terre Haute, IN
Site: Terre Haute, Indiana
Award: Passive Use Area

The company had done landscaping for the same client before and knew that the couple enjoyed working with plants and dense clusters of them. Put these needs into the landscape with consideration of the plants' seasonal factors meant a variety of plants with room for working on them and maintaining a scale with the property. Very few homes in the area are developed from line to line and to blend this home with the community expanded the challenge.

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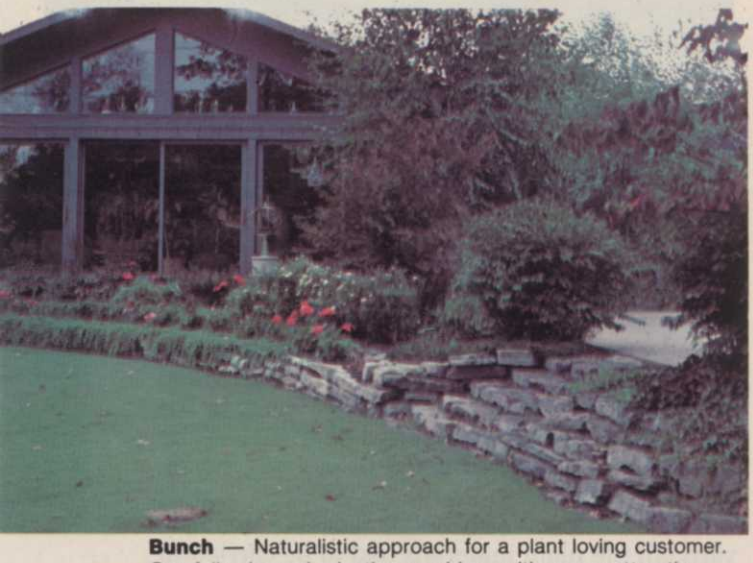
Harold Timmer of Bunch selected small flowering trees and dwarf forms, such as maples, to get a quantity of materials and keep them within the scale of the property. He worked in a few large trees as pivotal points and an undergrowth of hawthorns, redbuds, Amur Maples, dogwood, sourwood, *Amelanchier*, and small flowering crabs. Ground covers were also used as well as some shrubs and small evergreens to provide shape in the planting designs.



Bunch — Naturalistic approach for a plant loving customer. Carefully planned selection provides multi-season attraction.

A slope in the back yard to the lake required terracing. To get an open space, Timmer dropped the level of the yard near the house to make a level surface to the embankment of the pond. A low flagstone wall in front of the garden room retains a short terraced area and provides an adequate space for the owners to garden.

"We took a naturalistic approach to the landscaping yet didn't allow it to escape the people entirely," says Timmer. The flow from one area to another happens naturally. Plant materials were used as if they were there first. We had to do careful pruning, particularly on the Amur Maples, to keep the natural form but control them within a range."

Green Brothers Landscape Company, Smyrna, GA
Site: Atlanta, Georgia
Award: Entrance

The residents of this house, built in the 1950's in a nice neighborhood of Atlanta, felt that if they could update its appearance they could sell it. The house was perched on top of a hill surrounded by hardwood trees. The greatest challenge was to solve the unattractive approach to the house. Problems to deal with included double garage doors with windows above them and unneeded iron gates below two steep landing steps that led to the front door and to a basement room located next to the garage door.

The designer thought a series of steps and landings would make an interesting approach to the front door. From a large deck outside the guest bedroom suite and the large master bedroom, a walkway trails down to the driveway in a series of decks and landings. Through the creation of various levels of cedar decks, the designer wanted the clients to be able to use the area as a functional space and also feel when inside as though they were living in the treetops of the existing trees. The decks broke the steep look of the two story part of the house and brick planters softened the steps.

The wood of the house was changed from a bright white with a blue tint to tan which blends with the tree trunks and the decking, all of which was made of cedar. A Chippendale railing was designed to give a strong added detail to the house. Red brick was used and painted tan to go with the house. A driftwood sculpture fountain added to the motif. "We wanted to bring everything back to nature," says Jim Gibbs, president of Green Brothers. "We took advantage of the enormous trees around the house.

Green Brothers —Updated look for a house on top of a hill. Steps, decks and earth tones blend house on top a hill.

Gibbs thinks that he succeeded in his purpose and belief about design—that form follows function—on this site. The clients felt so good about the redesign that they decided not to move. "As a designer, this gives a personal satisfaction that is very rewarding," says Gibbs.

Continues on page 28

What do turfgrass experts say about Pennant* ryegrass?

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Pennant topped many of its competitors in these tests, including overseeding and heat tolerance trials in the Southwest. Some of the expert's findings are illustrated below.

Turf performance scores. North Brunswick, N.J. 1975-78. (9 = Best).

YORKTOWN II	6.4
PENNANT	6.3
CITATION	5.9
DERBY	5.4
PENNFINE	5.4
MANHATTAN	5.2

Reaction to brown patch disease (Rhizoctonia), Adelphia, N.J., 1978. (9 = least damage)

PENNANT	7.5
YORKTOWN II	7.0
CITATION	7.0
REGAL	6.3
DERBY	6.2
PENNFINE	5.8

Warm and cool season average turf score, Southern California first-year tests, 1979.

	Poor — Best
PENNANT	
PENNFINE	
DIPLOMAT	
YORKTOWN II	
MANHATTAN	
CITATION	

Percent winter injury. Adelphia, N.J. March 1978. (10 of 26 varieties tested showed no significant injury.)

PENNANT	0%
MANHATTAN	0%
CITATION	11%
DERBY	14%
PENNFINE	18%
LINN	38%

Pennant was best among 12 varieties tested for red thread disease (Corticium fuciforme) in 1-year average, 1979-80. Western WA. (Low score = Best).

PENNANT	20.7 %
CITATION	23.6 %
DERBY	26.3 %
PENNFINE	30.4 %
MANHATTAN	40.4 %
YORKTOWN II	47.8 %

Average Turf Performance scores, February 1980. Southern Arizona turf overseeding on Tifgreen Bermuda. Sixteen entries seeded October 1979. (10 = Best).

PENNANT	7.7
PREMIER	7.3
REGAL	6.3
CBS	5.7
DERBY	5.5
ANNUAL	2.3

*Plant variety protection pending and anticipated

Pennant was also found to maintain its excellent turf color and quality late into the season. **Pennant** will impress you with its rich, moderately dark green hue, its fine leaf blades, and its improved mowing properties. We call it "The Trophy Turf". We think you will, too.

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Landscapes *from page 26*

Chazz Cox Associates, Winter Park, FL
Site: Winter Park, Florida
Award: Single Family Residence

This older house in Winter Park was completely gutted and rebuilt by the new owners. They needed a landscape setting to accompany the new home and a pool in the back yard.

To make this transformation, the landscaper had to cut into a steep slope in the back yard to allow the pool to lie on a level grade. A tremendous amount of boulders were used to build up the slope. In the front, more boulder work was used on the retaining slope. Chazz Cox chose Florida field stone because it blends well with plant materials.

Plant materials, which Cox grows in his own nursery, were picked to give a very tropical central Florida look. The wide variety used includes leather leaf fern, Needle Palm, philods, flowering evergreen pear, Weeping Podocarpus, scheffleras, spathiphyllums, impatiens (which flower year-round), ivy, tassle fern, asparagus fern, day lillies, holly ferns, dracenas, many accent plants, and a heavy mass of ground cover. There is no grass on the project.

Chazz Cox —Both house and landscape were transformed to make an older home and lot more entertaining and tropical. There is no grass on the project. Pool was also added.

The pool was painted a dark color to reflect the sky. The judges remarked that the judicious selection and use of plants and the selection of pool and awning color strategically integrate the house and pool area into the jungle-like environment.

Summary

All six award winners represent the most modern thinking in residential landscape designing. According to Ray Brush, administrator of the National Landscape Association, "The entries each year are becoming higher quality from a design point-of-view. Whether this is indicative of all landscaping, I can't say. It does indicate an ability of our members to do excellent landscaping."

Most of the projects were built on sloping ground. Brush thinks this may be a trend. "More people are recognizing that you can do more creative landscapes on less regular terrain. They are gradually becoming more prominent."

"In the U.S., we need to pay more attention to this," Brush says. "We have taken tillable land and put it into building homes—a waste of a precious resource. Your most interesting and greatest appealing landscape projects do have varying contours in the land. Although more expensive to build, it's easier to develop more interesting and outstanding landscape designs with slopes and contours."

The judges were certainly impressed, to the extent of being flabbergasted by some of the workmanship. Retainer walls, edging designs, and plant selection seem perfect on most of the sites. And this is exactly what the homeowner expects. **WTT**

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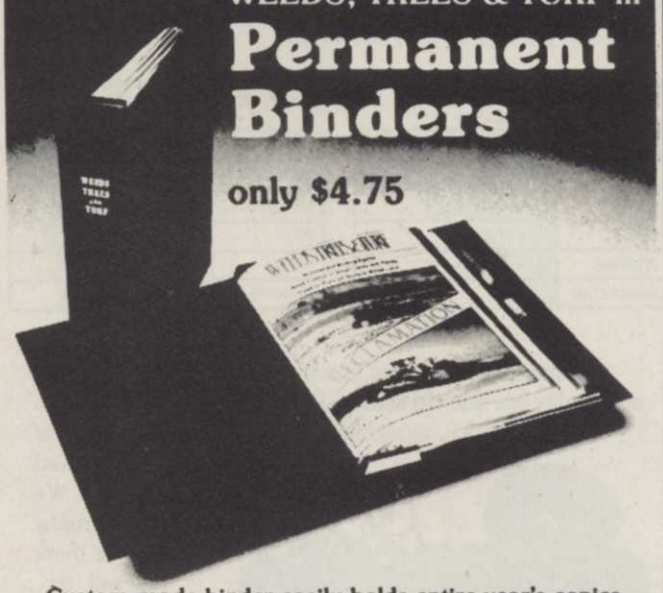

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SUN-LOVING GROUND COVERS ADD TEXTURE TO THE LANDSCAPE

By **Douglas J. Chapman,** Horticulturist, Dow Gardens, Midland, MI

Last month we discussed shade-tolerant ground covers. Presently, I would like to review a representative group of woody ground covers which thrive in full sun. These deciduous ground covers include Cranberry, Creeping, and Rockspray Cotoneaster; Shrubby St. Johnswort, Northern Bayberry, and Lowbush Blueberry. Two sun-loving evergreen types would be junipers and a selected form of media yew.

Cotoneaster is a shrub ground cover which thrives in full sun, needing well-drained soil. Cotoneaster is a relative of apple (in the Rosaceae family) and is slightly susceptible to Fireblight and several insects, e.g. aphids and mites. In mass plantings or as individual species, Cranberry, Rockspray, and Creeping Cotoneaster can be outstanding as ground covers.

Cranberry Cotoneaster (*Cotoneaster apiculata*) is a low-spreading shrub with the ultimate height of 3 feet and a spread of 3 to 6 feet. It mounds on itself, being similar to *Juniperus sabina* 'Broadmoor.' It makes an impenetrable border. The leaves are dark glossy green throughout the summer, becoming a purplish-bronze during the fall. This fall color is effective for three to five weeks. The bright red fruit (¼ to ⅓ inch in diameter) is particularly effective during August and September when contrasted with the dark green foliage. The only disadvantage with Cranberry Cotoneaster is its extreme susceptibility to aphids, thus requiring several sprays annually.

Creeping Cotoneaster (*Cotoneaster adpressa*) is a fine textured dwarf shrub, 1 to 1½ feet in height with an ultimate spread of 4 to 6 feet. Where branches come in contact with fertile soil, it will layer and root as will most cotoneasters. The ¼-inch diameter dark red fruit looks very attractive against the glossy green summer leaves. Creeping Cotoneaster is an exciting ground cover in Ohio and southern Michigan and is less effective in central Michigan. Further, Dirr has reported that it is not a good performer in central Illinois.

Rockspray Cotoneaster (*Cotoneaster horizontalis*) has been the standard cotoneaster ground cover. It is somewhat mounding, reaching 2 to 3 feet in height with a spread of 3 to 5 feet. The summer foliage is, again, a bright glossy dark green, becoming a dull purple during the fall months. The bright red fruit is approximately 1/5 inch in diameter, being particularly effective during September and October. Rockspray Cotoneaster is considerably more prostrate than *C. apiculata* and has slightly smaller leaves. Generally speaking, it is not as aggressive as the other two types and is more susceptible to Fireblight. Each horticulturist will have his own favorite cotoneaster. Certainly in central Michigan, *C. apiculata* has to rank on the top when considering the cotoneaster types. *Cotoneaster horizontalis* would rank second, being finer, less aggressive, and slightly more prone to Fireblight than the apiculata type. *Cotoneaster adpressa* is unique and interesting but will rank last when considering these three types. Cotoneaster is extremely effective when used in mass plantings or as single specimen ground covers. Generally speaking, cotoneaster is not a good companion plant with large or small trees.

Shrubby **St. Johnswort** (*Hypericum prolificum*) is the hardiest and most effective of the Hypericums. St. Johnswort is a small, dense, round shrub, 2 to 4 feet in height and spread. Its stems are erect yet stiff, giving it a very structured feeling. The summer foliage is dark lustrous green, becoming bluish-green late in the season. The flowers are usually a bright yellow (buttercup-like), ¾ to 1 inch in diameter, and are borne in a terminal and axillary position. They are particularly effective during June and July. St. Johnswort does extremely well when planted in dry, gravelly soils in full sun. It is adaptable to a large range in pH but seems to thrive in calcareous soils. The one maintenance consideration is that St. Johnswort should be pruned vigorously each and every spring.

Northern Bayberry (*Myrica pensylvanica*) is a semi-evergreen "deciduous shrub" with an upright, rounded habit of growth. It spreads by underground stolons, making it particularly effective as a low to medium range ground cover. Although it has been reported to reach 9 feet in height, in central Michigan it is uncommon to see this exciting lustrous, dark green, leathery leaf ground cover reach over 3 feet in height. It flowers in early to mid May before the leaves appear. The small, gray fruit, which cling to the stems, adds texture during the winter but isn't colorful. The most exciting considerations include the density which this plant can attain and its ability to not only adapt but thrive in gravelly, poor, well-drained soils. *Myrica pensylvanica* not only has a long history of use in the landscape and for candles but has an added bonus—when one rubs the foliage between the fingers, the aroma left behind is exciting.

Lowbush Blueberry (*Vaccinium angustifolium*) is a low straggly shrub, reaching 8 to 12 inches in height and with an 18 to 24 inch spread. Leaves are a lustrous green in summer, changing to a bronze-scarlet during the fall. The white

Continues on page 32

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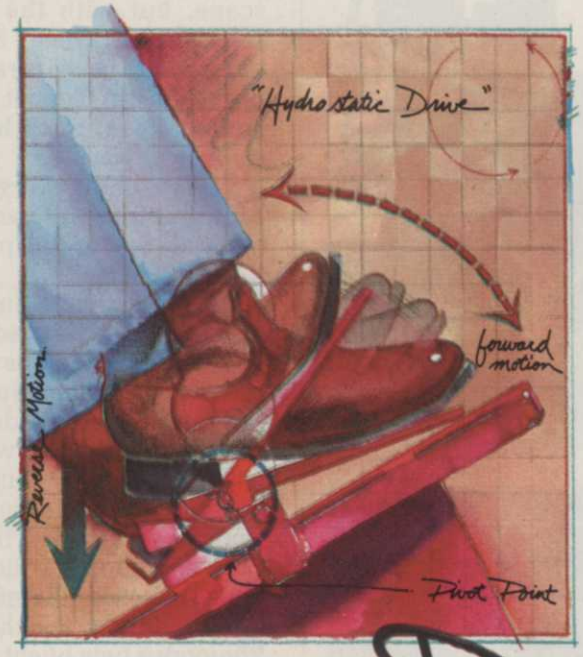

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Ground Covers *from page 30*

flowers are ¼ inch long, appearing in racemes during mid to late May. Edible fruit is a bluish-black, ¼ to ½ inch across. Lowbush Blueberry has not been used to any great extent in the landscape, but with the development of a new cultivar by Michigan State University, its potential seems to have increased. The new cultivar, *V. angustifolium* 'Tophat,' seems to be an aggressive ground cover, fruits heavily, and will thrive in sunny locations.

Several of the evergreen ground covers worth considering include several cultivars of Horizontal and Savin Juniper and *X Taxus media* 'Chadwickii.'

Junipers thrive in conditions from well-drained to medium soils. They are particularly effective and vigorous when grown in full sun locations. Some of the *Juniperus horizontalis* types can quickly become dense, exciting ground covers. They are good when used in conjunction with rock gardens, foundation plantings, or mass areas for bank erosion control where mowing would be difficult. There are many cultivars of Creeping Juniper which are extremely susceptible to disease; therefore, I shall only discuss three cultivars which show good tolerance to *Phomopsis* twig blight.

Juniperus horizontalis 'Douglasii' is a very horizontal and rapid growing ground cover. It reaches 12 to 18 inches in height and 6 to 8 feet in width. The blue-green foliage of summer often turns somewhat purplish through the winter months, adding additional color to the landscape.

Juniperus horizontalis 'Emerald Spreader' is a low growing, prostrate form rarely reaching over 6 to 8 inches in height. It has a brilliant mint-green foliage year-round and is an exciting addition to the general landscape.

Juniperus horizontalis 'Wiltoni' or 'Blue Rug' is a very horizontal form, reaching 6 to 8 inches in height with a spread of 6 to 8 feet. Its foliage is an intense silver-blue, becoming a purplish-blue-green during the fall. Once established, this plant can grow quite rapidly.

Of the Savin Juniper types, *Juniperus sabina* 'Broadmoor' is the most exciting. It is a dwarf, low-spreading shrub which tends to build up from the center with age, developing a unique mounded habit. The color in early season is a brilliant mint-green, becoming a soft gray-green during summer, fall, and winter.

There are many exciting yews, but one yew ground cover which is well adapted to the Midwest that does not break down under heavy snow and holds its rich light green color throughout the winter is *X Taxus media* 'Chadwickii.' 'Chadwick' Yew is a low-spreading type, reaching 3 to 4 feet in height. It is low growing and, therefore, a relatively low maintenance regal ground cover. **WTT**

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PERFORMANCE BONDS AND PENALTIES LACK UNIFORMITY, ADD TO COSTS

By Dave Johnstone, business columnist

As contracts get larger and you begin bidding on government jobs you will encounter an extra layer of legalese, performance bonding and penalty clauses. The additional time and cost of meeting these new requirements has to be considered in bidding.

There appears to be little consistency with performance bonds and penalty clauses. You must approach each job case by case. Some relief can be found in public projects since uniformity is an obesession. So far as we can find out, no body such as the National Commission on Uniform State Legislation—which generated the Uniform Commercial Code in force in every state except Louisiana—or the National Conference of Building Code Officials has taken up the task of hammering out model provisions. The neglect may be oversight, but the task is also difficult. State governments, on the other hand, have striven for some degree of uniformity, at least as far as suggestions go. Since states administer federal funds and are faced with a multiplicity of political subdivisions, they have some interest in keeping things orderly. The alternative is for staff to spend most of its time in court.

Instruments of Control

If you're dealing with the public sector, the chances are you won't be able to modify the deal extensively, since any state guidelines will probably be followed. However, like other specifications, performance bond and penalty provisions can sometimes be tempered if you go in before the invitation to bid is written up. To be able to do this, you must be on good terms with your public works officials. You can get on good terms by visiting them with descriptions of your capabilities to go into the file. Sometimes, the performance bond and penalty provisions may be picked up as a chunk from a bricks-and-mortar guideline that has nothing to do with the new job. Spec writers are as human as anyone else. Our favorite story dates back to 1970, when the Federal EPA, observing that coho salmon had been successfully introduced to Lake Michigan, transferred a water quality standard from Puget Sound to that freshwater lake in order to meet a deadline. The only thing Puget Sound has in common with Lake Michigan is wetness.

> A refusal by insurance and bonding companies to cover you indicates you are not ready for that job.

Dave Johnstone has more than 15 years experience in the construction equipment market. He has managed product introduction to the construction and rental equipment markets and has worked for a rental industry association. He has hands-on experience with nearly all types of outdoor equipment. If you have topics you would like Dave to address, you may write him at 267 Willow St., New Haven, CT 06511.

We have to face reality, and it would be silly to deny that performance bond and penalty provisions, like other specifications, can be tailored to the profiles of favored organizations or the provisions may be ignored. In the event you encounter something funny on a governmental level, you may want to contact your F.B.I. or U.S. Attorney or the Public Responsibility Section of the Department of Justice. All these officials have full discretion, which means they can ignore you or heed you as they will. Challengers of sweetheart deals are not too popular.

Add Bond and Insurance Expense to Your Bid

You may or may not be able to make the performance bond and penalty provisions more realistic (easier) by talking things over with public works officials and with your industry sources (you stand a better chance with the latter, who will probably be more flexible and understanding of your money bind).

If your bonding company and insurance carrier have had good experience with you, you will get a good rate, even though rates like other costs are on the upswing. If they have had bad experience with you, they may not accept the risk and their refusal or reluctance to handle you will be another indication to you that you are not yet ready to take on the business. If your bonding company and insurance carrier have had no experience with you, they will have to develop it—but in the meantime, if you present them with the same kind of information you would give to a bank in application for a loan or the same kind of information you would use to sell a new customer, they may look upon you favorably. Essentially, this information would include: 1) Photographs of your headquarters, equipment and

Continues on page 38

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Uniformity *from page 36*

people; 2) Detailed financial statements, covering a period of three years to demonstrate responsible growth; and 3) References, listing not only your happy customers but describing the type of work done for them.

Whatever your rating with bonding companies and insurance carriers, be certain to include the costs in your bid; and when you get the opportunity, point out to your prospect orally the additional dollar costs his requirements have generated. It may be that by loosening up his requirements somewhat, he might have saved a substantial sum. It is very difficult to generalize, but chances are the job you have bid on is not as critical to safety as a highway bridge, nor as critical to income-generation as a commercial building, and there is no valid reason why tight performance specifications appropriate to those projects should be carried over and applied to a task which may be largely aesthetic. If there is indeed no room for play—and schedules must be closely maintained, then you should be compensated accordingly, with a differential that will cover your increased cost of doing business, risk, and effort.

> Standardization of bonding would be welcomed by insurance carriers and bonding companies.

Common Jobs Should Permit Model Provisions

One argument against standardization of performance bond and penalty provisions is that every job carries a different risk.Jobs involving earthmoving, planting, maintenance and landscape design have common elements that can be weighed, measured, and evaluated. There is no good reason (except empire-building) that performance bond and penalty provisions cannot be standardized at varying level of risk. The bonding companies and insurance carriers should welcome it.

Such standardization, however, is more appropriately the work of city, state and national associations than it is the work of a single company.

The group with the greatest political power is probably the Associated General Contractors with its state organizations. Perhaps it's time to activate them. In any case, the state organization would be a good one for you to support, if you are not now associated. Associated Landscape Contractors of America and National Landscape Association should be interested, as well. **WTT**

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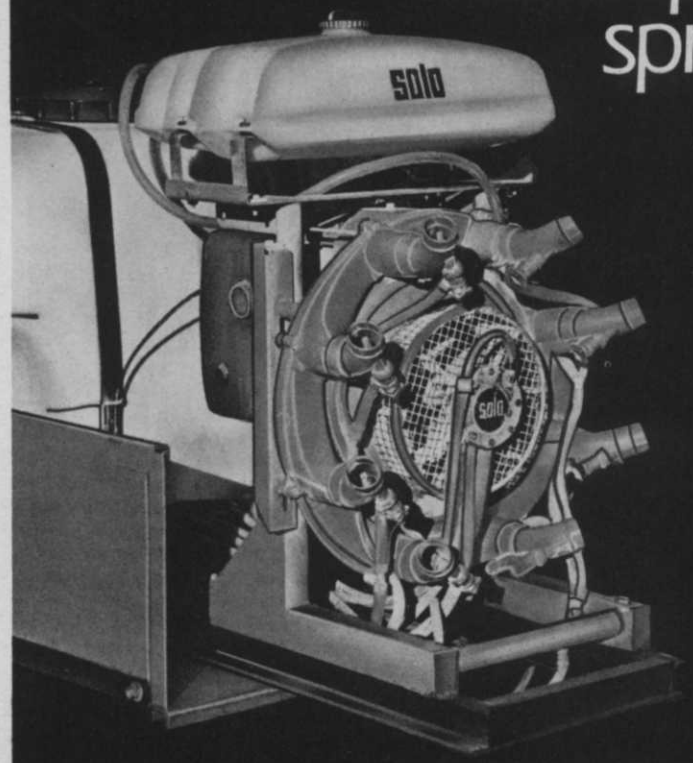

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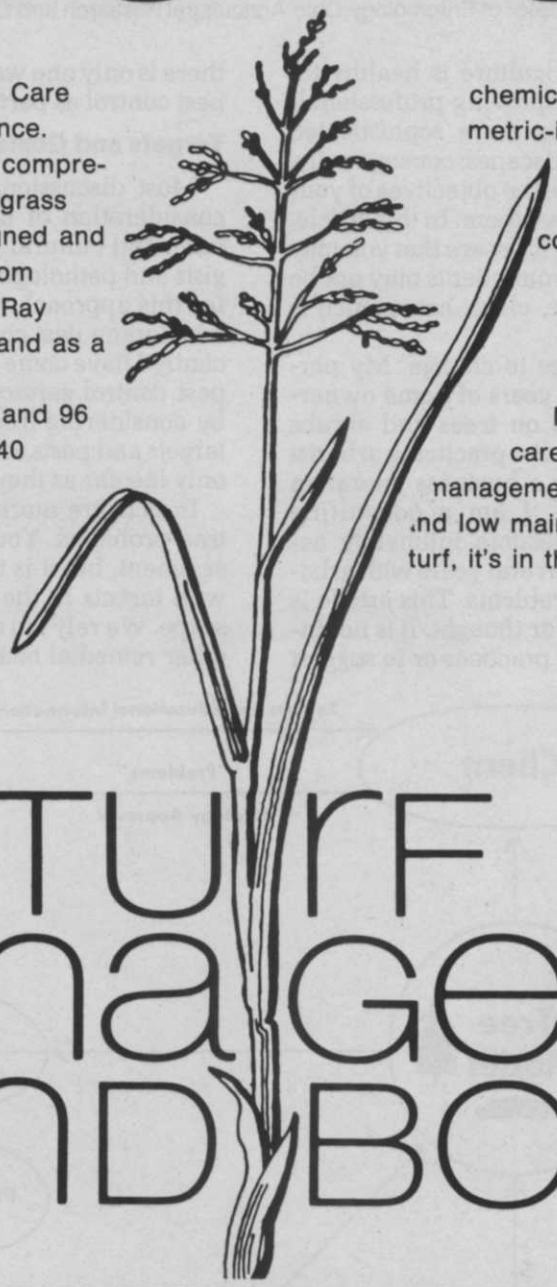

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HBJ

ALTERNATE STRATEGY FOR ARBORISTS— TREAT THE TREE, NOT THE CUSTOMER

By David G. Nielsen, Ph.D., Professor of Entomology, Ohio Agricultural Research and Development Center, Wooster, Ohio

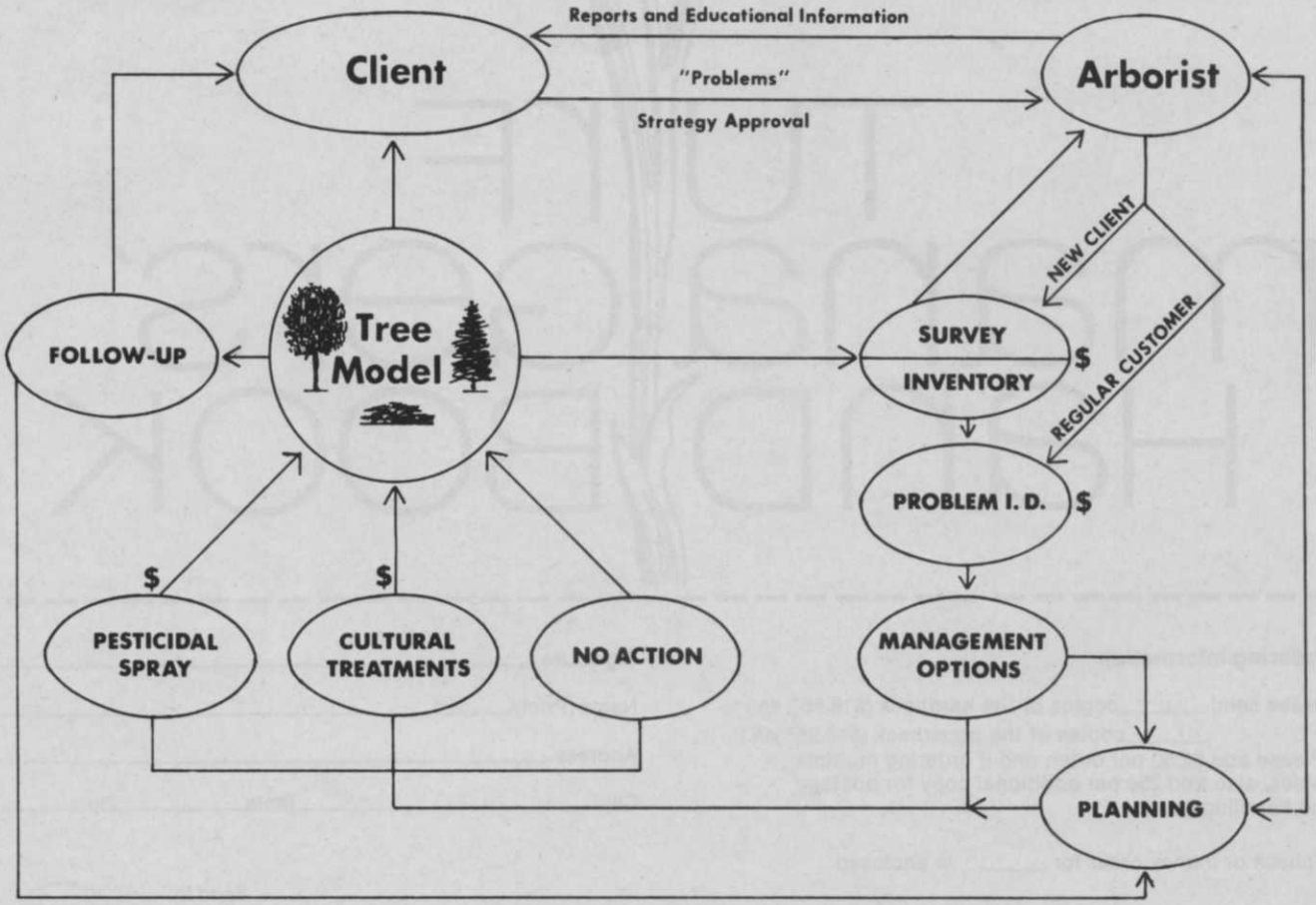
If the profession of arboriculture is healthy today, there is interest in improving professionalism. Clients are becoming more sophisticated and interested in their landscapes; consequently, there is need to re-examine the objectives of your service and how you achieve them. In this article, I will suggest a strategy for tree care that you may not have considered and your clients may not be ready to accept. However, client acceptance is part of the challenge.

I am issuing a challenge to change. My perspective is based on eight years of home ownership and studying insects on trees and shrubs since 1968. Although I'm not a practicing arborist responsible for managing a business operation that must turn a profit, I am a consulting entomologist and have become intimately acquainted during the past several years with arboricultural practices and problems. This article is intended to provide *food for thought*. It is not intended to criticize current practices or to suggest there is only one way to think about or implement pest control as part of an arboricultural service.

Targets and Goals

Most discussions of pest control begin with consideration of targets — specific insect, disease, and cultural problems. Perhaps entomologists and pathologists can be blamed but forgiven for this approach, because we are charged with developing pest control strategies. However, recently I have come to believe that optimization of pest control services can only be accomplished by considering trees and clients as the primary targets and pests as secondary factors to consider, only insofar as they impact trees and people.

Insects are more often people problems than tree problems. You may not agree with this assessment, but it is the way most of us have dealt with insects in the home and commercial landscape. We rely too much on pesticidal sprays and other remedial tactics to deal with pests. We are



Basic Model for Implementing Tree Health Care

Systematic approach to tree health care. Charge for services marked with $. Survey and follow-up are often neglected by landscape managers.

too ready to recommend or implement a spray program merely to soothe or diminish fears that our clients have for their trees. People often become so emotionally attached to their trees that management decisions are made without careful consideration.

The Quick Answer

I submit that most applications of pesticides to urban trees are unnecessary. They do little, if anything, to enhance tree vigor, and often have little impact on the pest's eventual population level, because sprays are used against harmless infestations or applied at the wrong time. The same is true in the lawn care industry. The so-called "preventive strategy" found acceptance at a time when scientific instrumentation was not sophisticated enough to detect low levels of pesticides in the environment. During the past nine years, the U.S. Environmental Protection Agency, prodded by environmentalist demands, has been reducing the pesticide arsenal available to the arborist and other landscape managers. We can expect this trend to continue.

You may argue that any sensible arborist would gladly eliminate a pesticidal application from his service, provided he could be assured that plant vigor would not be jeopardized. I tend to agree, since costs of pesticides have skyrocketed during the past few years. However, we continue to over-use pesticides.

An arborist from a leading national firm recently told me that most arborists know what to do, but there just isn't time to do it. *That's what this article is about:* deciding what needs to be done and doing it.

Let's forget pests for a minute and consider the target — the tree. Can we begin to think in terms of *Tree Health Care* (to borrow a phrase from Dr. C. C. Powell, Plant Pathologist at The Ohio State University and the Ohio Agricultural Research and Development Center). I'm suggesting that we de-emphasize pests and concentrate on developing a holistic or comprehensive landscape management strategy, much as physicians are beginning to emphasize holistic medicine.

Tree Health Care Approach

In this new scheme, trouble-shooting, the art of using training and experience to diagnose a problem and prescribe a solution, will be necessary, but mostly for new clients. You will become so familiar with the landscapes of your regular customers that developing pest populations or infections will usually be detected before damage occurs or clients become alarmed.

Scheduled maintenance will optimize tree health, thereby minimizing pest problems. Customers will be paying for inspections and early detection rather than chemical sprays. The consultation segment of your business will be expanded as you learn how to manage a landscape and optimize pest control services. To do this, you may need to develop a new service ethic: one that emphasizes personal and public service, not necessarily pesticides.

I realize that many initial contacts result from some real and some imagined crises. This will undoubtedly continue. However, once you've controlled your clients "brush fire" you have an opportunity to sell your landscape service.

Are homeowners and managers of institutional landscapes ready to buy the concept of tree health care? I think some of them are now and that many others will be in the near future. Success of companies that provide a tree health care service tends to support this thought. There is certainly a significant segment of potential clients who have not contacted an arborist or pest control operation, because they hesitate to support use of conventional insecticides. A few newcomers to the plant maintenance industry are courting this untapped segment of our society by using titles that project an image of "organic" service practices. Recently, employees of such a firm requested that I familiarize them with alternative pest control practices. During our rather brief discussion, I learned they are more than willing to implement conventional pesticidal sprays, if other tactics are not effective. These people are selling a preventive health care program and using all available tactics to promote tree vigor. You can sell the same service by becoming thoroughly familiar with plant-pest relationships and organizing an educational program to sell your new product — Plant Health Care — not a pest control service, to potential clients. Perhaps highly professional arborists have been operating this way. If so, then many will be in agreement with me and wondering why I think I'm challenging them with something new. However, based on conversations with arborists, I know that many practicing today have not approached their work in the way I'm suggesting.

A basic model for implementing tree health care places your client at the top because he/she is the most important component. Trees don't pay arborists' fees, people do. So, we must keep our client's satisfaction in mind at all times. The tree occupies the center of the schematic because that is what we'll manage, not insects.

Health care service begins with a survey of the client's landscape that includes an inventory of all trees according to species, size class, and condition. Note physical factors that may influence tree vigor and implementation of management practices. The property analysis is prepared and submitted with a bill to the client. At the same time, a tree health management strategy is pro-

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Arborists *from page 41*

posed that includes at least spring and fall tree inspections. If the client accepts the proposal, every effort is made to keep the client informed about all activities provided through the service. Regular contact, especially when little spraying occurs, is essential to customer retention.

After completing the tree inventory and signing the customer to your service, make sure you are familiar with all cultural and pest problems common to trees in your geographical area. The knowledge required to make good management decisions comes only from study, on-the-job training, and experience. However, the initial survey and inventory for which you charge a fee will improve the ability of even relatively inexperienced arborists to make rational decisions, because they will have enough lead time, before action is required, to consult research and extension specialists in agronomy, horticulture, plant pathology, and entomology to learn how to combat pests detected.

Problem identification will become mostly routine and is included in the standard fee, unless you are called by the client between scheduled surveys. Background information previously obtained about insects in your area has already prepared you for consideration of management options, based on pest density and your client's attitudes. Next, you plan an action strategy that may include no action, cultural treatment, or application of an insecticide.

The "no action" option may be the best approach. However, this decision must be explained carefully, so the client respects and trusts your recommendation, rather than contacting another arborist or pest control operator who may be less informed and more than willing to apply an unnecessary treatment for a fee.

Follow-up is critical to determine if tactics employed caused the desired result. You should include the cost of follow-up in your fee for implementation of any tactic. Communication of results to clients is crucial for maintaining confidence in the program and its practioners.

Detection of pest infestations before they become damaging, and awareness of management options before a control tactic is required, are the keys to effective pest control as part of quality tree care. Tree health care as a strategy for optimizing pest control services requires state-of-the-art familiarity with pests and trees. This is a professional challenge to modern arboriculturists.

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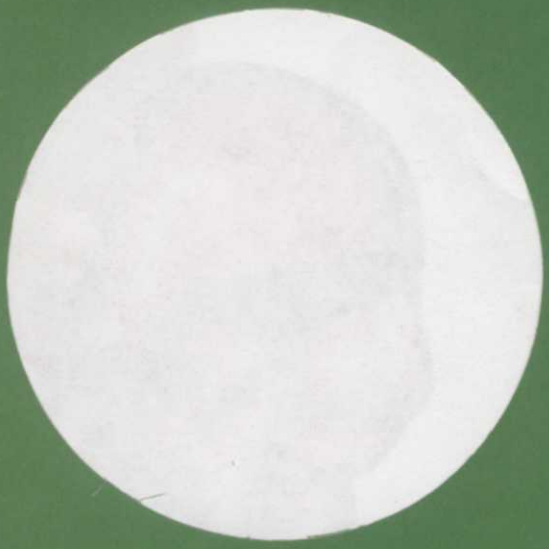

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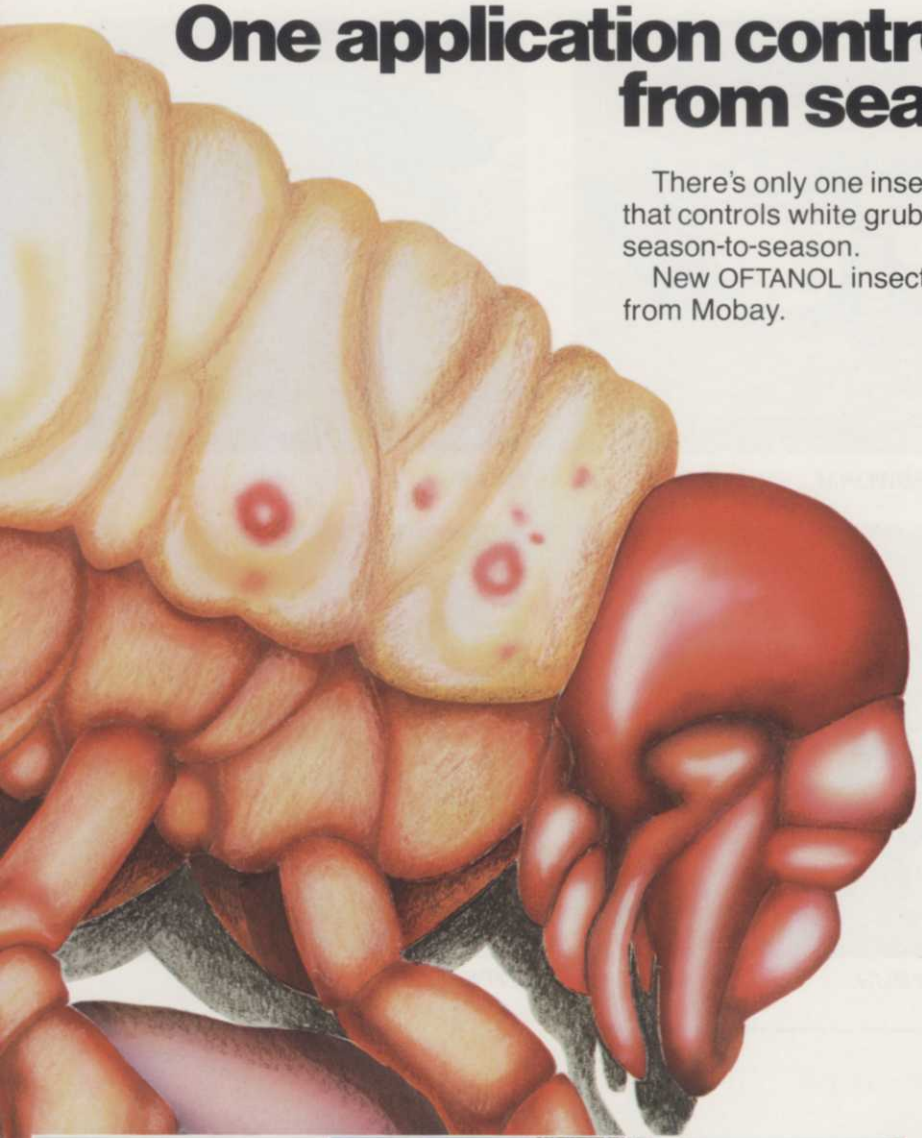

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VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: *We have been treating leaf spot in English ivy beds with several fungicides but it is getting worse. What would you recommend? (California)*
A: The problem could be bacterial leaf spot which is not controlled with fungicides. Ask your local cooperative extension agent for help in identification.

Bacterial leaf spots at first are small, round, light green and water-soaked on the lower surface. As the spots increase in size, they become angular and develop dark brown or black centers with reddish margins. Stem tissue also can become infected and appear black and shriveled, often with girdling cankers.

Warm, moist conditions favor the disease, particularly when the foliage remains wet throughout the night. To minimize the disease potential, water in the morning with a method such as drip irrigation that does not wet the foliage.

Q: *We have been hearing a lot lately about the effect of acid rain. How acid is this rain and how harmful is it to trees? (New York)*
A: Acid rains have been reported with a pH as low as 2.1 but normally are in the pH range of 4.0 to 5.8.

Acid rains have influenced the ecosystems in lakes leading to the extinction of fish. The effects on soils and trees are less clear.

Under laboratory conditions, simulated acid rains have inhibited seed germination, injured foliage, and accelerated the leaching of nutrients from soils and decreased growth of trees. However, trees in the natural environment may not be injured in the same manner or to the same degree. Further research is needed.

Q: *When should you prune trees to get the most rapid healing? (Pennsylvania)*
A: Wound closure is most rapid in pruning cuts made before May. Little callus formation occurs after July.

Q: *Is there any chemical control for ground pearls?*
A: No effective control, other than fumigation, is available.

Q: *Can Basagran be used to control nutsedge in Bermudagrass lawns? (Florida)*
A: Basagran will control yellow nutsedge, but it is not effective on purple nutsedge. MSMA and DSMA reportedly give good control of purple nutsedge and can be used safely in established Bermudagrass.

Q: *I heard recently about a product called DOOM that is supposed to control beetle grubs for 20 years. Does it really work?*
A: DOOM is a trade name for one of the milky spore disease products labeled for Japanese beetle control. Refer to the May 1980 Vegetation Management column for further information.

Q: *Could you recommend a ground cover to plant in an area too shady to grow grass?*
A: Ivy *(Hedera helix)*, pachysandra *(Pachysandra terminalis)*, myrtle *(Vinca minor)*.

Q: *Other than pruning, what can be done to improve grass growth under trees? (Michigan)*
A: Some turfgrasses do better than others in shade. If the existing grass is not shade-tolerant, reseed with creeping red fescue or a mixutre of fine fescue and Kentucky bluegrass cultivars recommended for shade such as 'Glade' or 'BenSun.' Early spring is the best time to seed to assure sufficient sunlight for germination and establishment. Autumn seeding is sometimes recommended but falling leaves may mat and smother young seedlings.

Mow the grass about ½ inch higher than in sunny exposures to increase the photosynthetic leaf area.

Control diseases such as powdery mildew that are more prevalent in shade to allow turfgrasses to remain healthy and vigorous.

Subsurface fertilization of trees may encourage deeper rooting and reduce competition with turfgrasses for water during drought periods.

Q: *How can you identify ozone injury on trees? (Michigan)*
A: On deciduous or broadleaved trees, ozone injury symptoms appear as flecking or stippling caused by dead cells on the upper surface of the leaf. Usually only the palisade cells are affected. The susceptibility of the leaves to ozone is greatest just after maximum leaf expansion. Very young or very old leaves are seldom injured.

On gymnosperms, mild ozone injury appears as chlorotic mottling of needles. Acute injury causes death of the needle tip or the whole needle.

Unfortunately, trees are often subjected to more than one polluting substance, which makes it difficult to identify the problem. Combinations of pollutants can significantly alter the injury symptoms.

Q: *I have access to a large amount of rabbit manure. Can it be used like cattle manure in vertical holes to fertilize trees, or is the fertilizer value too low?*
A: Rabbit manure, which contains 2.4% nitrogen, .62% phosphorus and .05% potassium, calculated on an oven-dry basis, compares very favorably with cattle manure.

Q: *We have some areas in our fairways that dry out every summer because of poor water infiltration. Will the use of wetting agents correct this problem? (Ohio)*
A: Wetting agents can be used to improve water infiltration into thatch and hydrophobic soil but do not correct poor soil conditions caused by compaction or poor drainage. The effect of wetting agents usually is retained for two or three rains or irrigations.

Continued use of wetting agents on the same turfgrass area may not be advisable. The long-term effects of multiple applications of wetting agents on soil structure and turfgrass plants are not known.

Send your questions or comments to: Vegetation Management c/o WEEDS TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.

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Cultivars *from page 20*

lems. In arid regions stone mulches are increasingly tried but do not have the cooling effect and biological fascination of vegetation. Drought-tolerant prairie grasses can sometimes be substituted, requiring somewhat less irrigation than conventional turfgrasses. However, the turf they form is not the carpet-like sward to which most American homes are accustomed.

Because of such factors, and the chore of keeping a lawn mowed, feelings such as "abandon the law; let nature take over" are sometimes expressed. This approach is not very well thought through. Over most of the country conditions are such that unpleasant, costly surroundings would result for years to come. In humid regions the cycle would normally be: coarse annual weeds, adventive perennials, brush and brambles, and volunteer saplings of impermanent trees. Not for a hundred years or so would the disturbed landscape return to its natural climax of permanent, high-quality forest. Even then, most landscaping calls for open, airy parkland to extend the vista, provide air circulation and a sense of spaciousness. Nothing has proven more able or economical for meeting these needs than a lawn of turfgrasses conventionally tended.

The attitude "Let nature take over" is not well thought through. Nothing is more economical than a conventional lawn.

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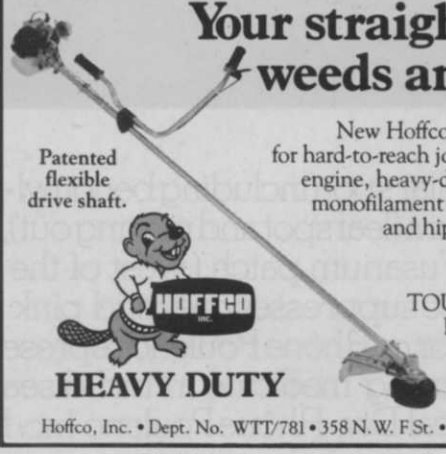

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TRADE SHOW

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The International Construction and Utility Equipment Exposition (ICUEE), scheduled for Johnson County Industrial Airport near Kansas City, MO, will include the latest technology in utility service and construction equipment.

The 1981 exhibit on August 11-13 will contain telescoping and articulated cranes, aerial and digger derricks, underground construction equipment, and a number of other smaller tools and equipment related to utility service and underground construction industries.

This year's exposition will be the seventh and largest since 1966. For more information, contact: Rae Rupp, c/o ICUEE '81, Suite 1632, 333 North Michigan Avenue, Chicago, IL 60601, 312/332-2037.

President of the Maryland Turfgrass Council, John Strickland, presents a check for the MITF Turfgrass Research Fellowship Fund to Fred Grau, president of the Musser Foundation. The money came from the proceeds of the second annual Mid-Atlantic Turfgrass Booster's Tournament held last fall at the Baltimore C.C.

MARKETING

Group kicks off flower/plant promotion

Flower and plant producer associations from all parts of the country and abroad met in St. Louis recently to initiate a research and promotion program for flowers and plants. Called Floraboard, the program focuses on market research, advertising, and promotion to spotlight uses of flowers and plants.

"These groups came to this meeting on March 11 to talk turkey," said Walt Preston, chairman of the Floraboard task force. Discussion by the twenty-eight associations represented centered on the role of producer groups in the upcoming Floraboard program. According to the proposed Floraboard legislation, producer associations will be certified to select the nominees that will serve on Floraboard.

A high majority of the producer group representatives at the meeting indicated they would personally support Floraboard. More than a third of those present committed their associa-

Continues on page 54

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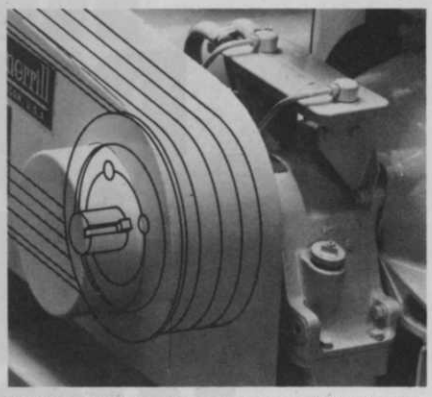

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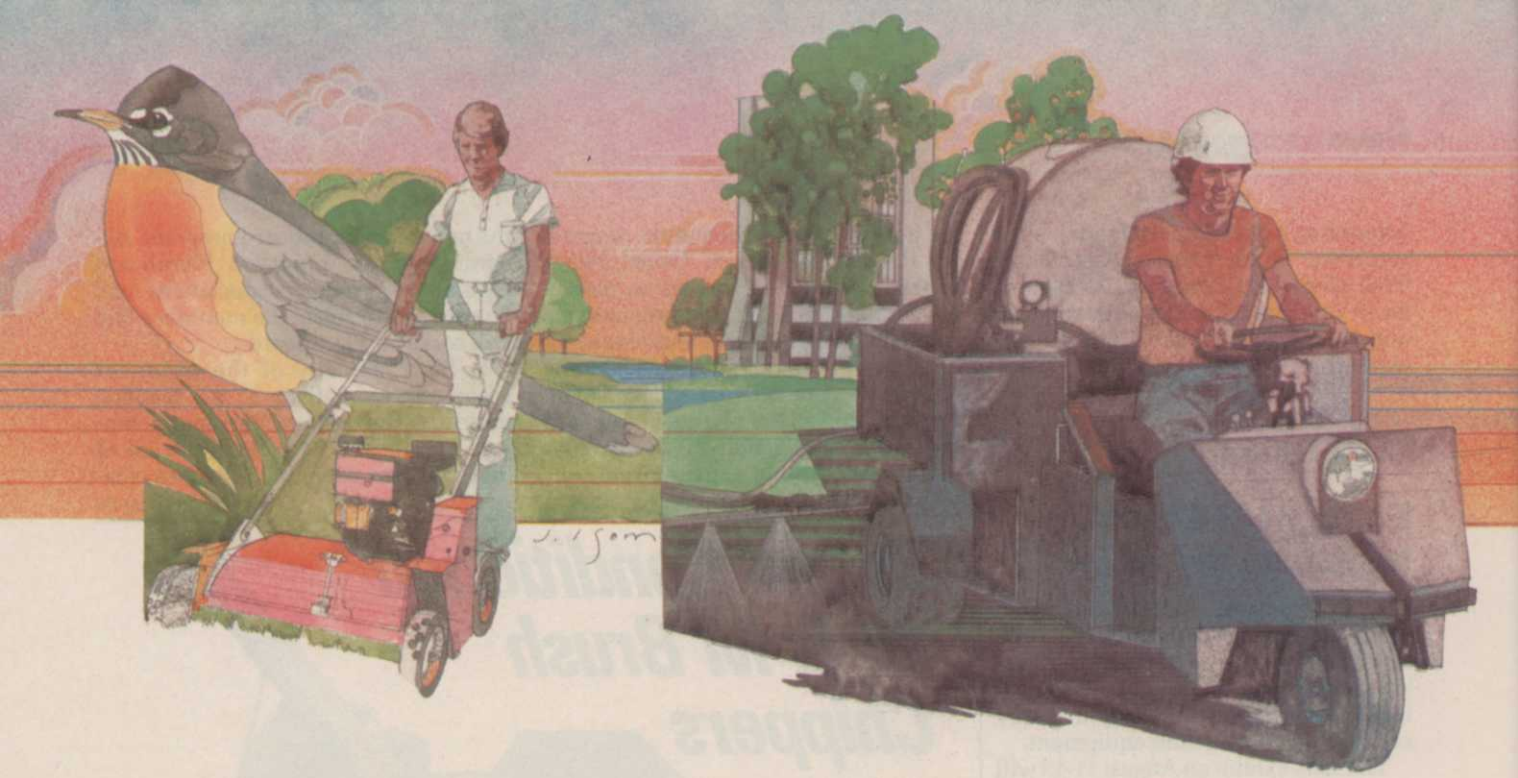

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The most singular advantage of Rugby is its ability to provide high-quality dark green turf when maintained at *low* nitrogen fertility and restricted moisture levels.

Most improved Kentucky bluegrass varieties are *not* low-fertility types. You may be told they performed well in turf trials. Unfortunately, you're *not* told that those trials are often conducted using *optimum* nitrogen levels. So it's no wonder you have to fertilize the heck out of these varieties to get good results.

Not so with Rugby. *You can actually get better results with Rugby than with other Kentucky bluegrass varieties while using less nitrogen fertilizer.*

And you'll also save on the *labor* it would take to apply that extra fertilizer and to do the extra mowing.

A HIGH-QUALITY TURF.

But no matter how much we tell you about the low-maintenance aspects of Rugby, ultimately you look for – and demand – *superior turf.* Your professional standards wouldn't settle for anything less. And we wouldn't want it any other way.

Rugby has a rapid spring green-up rate and excellent fall color. And it also displays *sustained growth during the mid-summer heat stress period,* even under low nitrogen fertility and restricted moisture.

Moreover, Rugby possesses a high level of resistance to most of the common and current turfgrass diseases. This is another factor which may well result in significant savings in turf management costs.

THE ENVIRONMENTALIST'S GRASS.

Using less water and fertilizer means potential dollar savings for you, of course. But you can also take satisfaction in the fact you'll be using *fewer natural resources.*

By now you're well aware of the increasing social consciousness among the population in this regard. And by making available a Kentucky bluegrass that fits the world of the '80's, we believe we're fulfilling an important need.

For more information on Rugby, write Rugby Kentucky Bluegrass, P.O. Box 923, Minneapolis, MN 55440.

Rugby
KENTUCKY BLUEGRASS
For low-maintenance turf

Circle No. 135 on Reader Inquiry Card

News *from page 51*

tion's support to Floraboard on the spot, based on earlier contact with their boards and membership. The remaining associations are committed to getting responses from their associations soon.

GOLF

Superintendents must analyze water use

Faced with severe watering restrictions, golf course superintendents must collect records of actual water usage and persuade governing bodies who allocate supplies, says Palmer Maples Jr., CGCS, Golf Course Superintendents Association director of education.

"If you are required to cut back by a certain percentage, it is vital that you know where your water actually goes," says Maples. Your records should be broken down into course areas, priorities, and a weekly and monthly schedule.

Next, Maples suggests establishing the impact of your golf course and those around you on the economy of your area. It is very important that you be able to show that your golf course and golf community are industries, which, if severely curtailed, could cause a significant impact on the local economy in terms of jobs, taxes, and revenue loss. It is also important to show that the economic hardship would not be limited to one club or a group of clubs.

"Use the economic impact not as a hammer but as a base to seek changes in any unreasonable situation," says Maples. "Offer to do your part as other industries are doing theirs. This approach will demonstrate the concern of the golf industry and its readiness to cooperate in a time of restricted water use."

As the situation worsens, political action by superintendents may become a necessity. In 1977, golf courses in the Monterey, CA area were able to show that severe restrictions on watering would lead to wide-ranging economic hardships on the tourist-dependent local economy. And today, New Jersey golf course superintendents are spearheading two statewide coalitions aimed both at relaxing the restrictions and educating the public.

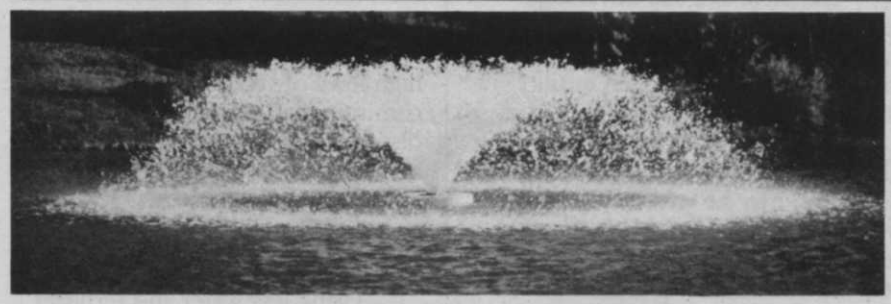
The National Arborist Association elected new officers and directors at its annual meeting. Seated from left to right are: Robert Mullane, secretary, White Plains, NY; Eric Haupt, president-elect, Sheffield, MA; Walter Money, president, Rockville, MD; Lee Lesh, vice president, Saratoga, CA; and Neil Engledow, treasurer, Indianapolis, IN. Standing from left to right: Bruce Walgren, immediate past president, West Hartford, CT: Robert Bartlett, director, Stamford, CT; Frank Harder, director, Hempstead, NY; William Owen, director, Portland, OR; and George Tyler, director, Amherst, NH.

AWARDS

Anheuser-Busch gets energy award

Anheuser-Busch Companies, Inc., has received the President's Award for Energy Efficiency for a project which daily recycles one million gallons of effluent from the company's Jacksonville brewery that were formerly sent to the city's waste treatment facilities. The liquid brewery waste, high in nutrients, is piped one mile north of the brewery to a 300-acre site, where it is used as a fertilizer in the growing of company-owned turf.

The land application project consumes 10 percent of the energy required by conventional waste water treatment. Furthermore, the use of nutrients in growing turf reduces fertilizer costs, as well as the amount of energy needed to produce fertilizer. Another advantage is that the brewery by-product streams supply the land with essential irrigation water.



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LETTERS

Lindane wording unclear

I believe that the wording in your short news article on lindane, which is found on page 48 of your January issue, gave a mistaken impression of the status of the Lindane RPAR and Zoecon's evaluation of the safety of this important insecticide. I have enclosed for your information a news release prepared by Zoecon, and also a short article from *Pest Control Magazine* (p. 56), February 1981, which I believe summarizes the Scientific Advisory Panel Meeting accurately and concisely.

I would be very happy to supply any more information on the status of the Lindane RPAR if you would find it useful.

Terry L. Burkoth, Ph.D.
Director of Product Development
Zoecon Corporation
Palo Alto, CA

The Science Advisory Panel made these recommendations to the EPA:

Household use of Lindane should be cancelled immediately in treated shelf paper and floor waxes; on pets; and as ornamental applications.

Preparations containing Lindane should be available only to licensed veterinarians, commercial ornamental applicators, registered pest control operators, and certified livestock applicators only with full warning label cautions and full protective clothing as proposed by EPA.

Uses on pineapples should be retained with warning label cautions. Uses on cucurbits, avocados, pecans, Christmas trees, and hardwood logs and lumber should be continued under restricted classification with such labels and protective clothing. Similar restrictions should be required for certified operators using Lindane in bark beetle control or seed treatment.

A three-generation reproductive study should be performed on an appropriate laboratory animal to determine whether Lindane interferes with reproductive processes.

Proper pruning cuts

The following is in relation to the comments made on pruning cuts in the April issue.

Practicing arborists have long recognized the value of the heal collar. The problem of the flush cut evolved from the old practice of stub cutting when pruning or reducing the size of trees. Since trees are individuals and have different growth habits, it is hard to train men just where and what degree to cut.

With the advent of the chain saw, slab cutting became easier. In the past no tree skinner worth his salt, working with a hand saw, would make a cut twice as large as necessary. In this age of mechanical pruning, better training and supervision must be used to reach a happy medium.

Freeman L. Parr
Horticultural Consultant
(Tequesta, Florida)

Missing references

While looking for a citation in Dr. Richard Smiley's article on thatch (April 1981), I found that his reference section was truncated and the last two references were deleted. I am sure both Dr. Smiley and other readers would appreciate it if you print these in a future issue. The two references are: "Whitehead et al 1979" and "Waite and Gorvod 1959."

Thank you,
Julie Welch (Bureau of Solid Waste)
Madison, Wisconsin

Terribly sorry. The citations are:
Waite, R., and A.R.N. Gorror. 1959. The comprehensive analysis of grasses. Journal of the Science of Food and Agriculture 10:317-326.
Whitehead, D.C., H. Buchan, and R.D. Hartley. 1979. Composition and decomposition of roots of ryegrass and red clover. Soil Biology and Biochemistry 11:619-628.

Interested in mowing

Enjoy your magazine. We maintain above 325 acres of turf for industrial business and the city of Syracuse. Would like to see an article on "contract mowing" done in your magazine.

Ted Stetler
Marcellus Nursery Inc.
Syracuse, NY

Thanks for your suggestion. We agree and are working on this subject for a future issue.—Ed.

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TREE CARE
by John M. Haller
Urban trees are subjected to every kind of environmental stress and abuse requiring continuous attention to keep them healthy. This book gives you the how-to's of planting, feeding, pruning, repairing and defending trees against their enemies with special coverage of environmental damage and miscellaneous troubles. **$9.00**

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by James Vardaman
A guide to help you increase profits from tree farming. Major problems confronting large and small tree farms and how to meet them including recommendations for seeking out accountants, lawyers and other professionals. **$20.50**

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by Simon & Schuster
Beginner and experts reference to 300 trees with 350 full-color illustrations. This authoritative guide supplies you with a full description of size, color, shape, leaves, flowers, fruit and seeds; information on habitat, propagation and growth conditions PLUS a hardiness zone maps, glossary and index.
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MODERN WEED CONTROL
by Alden S. Crafts
Deals exhaustively with the botany, chemistry, plant physiology and ecology involved in modern weed control technology. Contains lists and classifications of herbicides and an abundance of illustrative material that will help the reader visualize the varied aspects and forms of weed control. **$16.00**

DISEASES OF SHADE TREES
by Terry Tattar
Because shade trees require specialized maintenance rarely used in the forest, this text seeks to aid the arborist in providing necessary care to maintain vigor and prevent shade tree diseases. An in depth look at infectious and non-infectious tree diseases.
Plant pathology not necessary.
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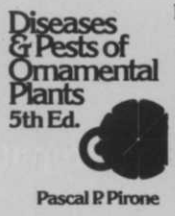

DISEASES & PESTS OF ORNAMENTAL PLANTS
by Pascal Pirone
This standard reference discusses diagnosis and treatment of diseases and organisms affecting nearly 500 varieties of ornamental plants grown outdoors, under glass or in the home. Easy to understand explanations of when and how to use the most effective fungicides, insecticides and other control methods. **$26.50**

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by A.W. Flegmann, Raymond George
Presenting a modern view of the chemical and physical aspects of soils as the environment of plant roots on a molecular scale, together with an up-do-date evaluation of field soils and currently used growth media.
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EXOTIC PLANT MANUAL
by Alfred Byrd Graf
A pictorial reference for plant identification of the best in cultivated tropicalia. Plants are grouped into growing locations and uses.
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Bookstore

DISEASES OF TURFGRASSES
by Houston Couch
Reference for identification and control of fungus and nematode-incited diseases. This 2nd edition features new varieties of potentially hazardous turfgrass diseases, also pesticide regulation changes and more efficient fungicides on the market.
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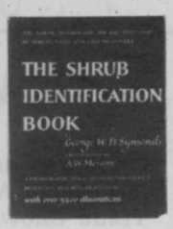

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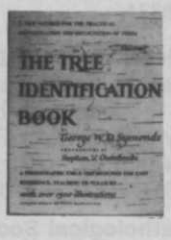

WEED SCIENCE
by Glenn C. Klingman,
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WTT

EVENTS

The current issue of WEEDS TREES & TURF carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 757 Third Ave., New York, NY 10017.

Aquatic Plant Management Society annual meeting, Coliseum Ramada Inn, Jackson, MS, **July 12-15.** Contact Lou Guerra, Texas Parks & Wildlife Dept., 134 Braniff, San Antonio, TX 78216, 512/349-2174.

Grower's Seminar, San Jose, CA, **July 14.** Contact Lanny E. Walker, Public Relations Director, California Association of Nurserymen, 1419 21st Street, Sacramento, CA 95814, 916/448-2881.

American Sod Producers Association Summer Convention & Field Days, Hershey Motor Lodge & Convention Center, Hershey, PA, **July 15-17.** Contact ASPA, Bob Garey, Executive Director 9th & Minnesota, Hastings, NE 68901, 402/463-4683.

American Association of Nurserymen 106th Annual Convention and Trade Show, Stouffer's Cincinnati Towers, **July 18-22.** Contact AAN, 230 Southern Bldg., Washington, D.C., 20005.

Plant Maintenance Symposium, Michigan State University, **July 28.** Contact Prof. Harold Davidson, Dept. of Horticulture, Horticulture Building, East Lansing, MI 48824.

Society of American Florists 1981 convention, Denver Hilton, Denver, CO, **July 29-Aug. 1.** Contact Barbara Kratchman, Society of American Florists, 901 North Washington Street, Alexandria, VA 22314, 703/836-8700.

American Phytopathological Society Annual Meeting, New Orleans, **Aug. 2-6.** Contact Steven Nelson, Convention Services, APS, 3340 Pilot Knob Rd., St. Paul, MN 55121, (612) 454-7250.

Sixth Nebraska Turfgrass Field Day and Equipment Show, Aug. 4. Contact Dr. Robert Shearman, University of Nebraska, 377 Plant Science Bldg., Lincoln, NE 68583, 402/472-2550.

Turf Field Day, University of Missouri South Farms, **Aug. 4.** Contact John Dunn, Horticulture Dept., University of Missouri, Columbia, MO 65211, 314/882-7838.

Ohio Turfgrass Research Field Day, Ohio State University Turfgrass Research Field Facility, Columbus, OH, **Aug. 4.** Contact Dr. Keith Karnok, 1827 Neil Avenue, Columbus, OH 43210, 614/422-2591.

Plant Growth Regulator Working Group 8th annual meeting, St. Petersburg Beach and Don Cesar Hotel, St. Petersburg, FL, **Aug. 4-6.** Contact Dr. L. H. Aung, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. 703/961-6511.

Illinois Landscape Contractors Association Summer Field Day, D. Hill

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Nurseries, Union, Illinois, **Aug. 5.** Contact Lucille Little, 202 W. Main St., PO Box 1049, St. Charles, IL 60174, (312) 584-5770.

ILD Interior Maintenance Technician's Short Course, Camelback Inn, Scottsdale, AZ, **Aug. 6.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102. 703/821-8611.

ILD Interior Maintenance Technician's Short Course, Denver, CO, **Aug. 8.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

International Society of Arboriculture Convention, Boyne Mountain Resort, Boyne Falls, Michigan, **Aug. 9-12.** Contact E.C. Bundy, ISA, PO Box 71, 5 Lincoln Square, Urbana, IL 61801, (217) 328-2032.

Central Plains Turf Foundation/ Kansas State University Turf Field Day, Manhattan, KS, **Aug. 12.** Contact Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters Hall, Manhattan, KS 66506, 913/532-6170.

Maine Nurserymen's Association summer meeting, Western Maine Forest Nursery Co., Fryeburg, ME, **Aug. 12.** Contact Rick Churchill, Executive Secretary, Plant & Soil Dept., S.M.V.T.I., So. Portland, ME 04106, 207/799-7303.

Residential Landscape Design Course I, Marriot North, Dallas, TX, **Aug. 12-14.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Massachusetts Nurseryman's Association summer meeting, Stewart's Nursery, Turners Falls, MA, **Aug. 19.** Contact Deborah Fanning, Executive Director, Massachusetts Nurseryman's Association, 715 Boylston Street, Boston, MA 02116.

Irrigation Association of New Jersery 7th annual field day, Reed's Sod Farm, Princeton Pike, Princeton, NJ, **Aug. 20.** Contact Linda Errickson, Administrator, P.O. Box 138, Dayton, NJ 08810, 201/329-6003.

American Association of Botanical Gardens and Arboreta midwest chapter, Dow Gardens, Midland, MI, **Aug. 20-22.** Contact The Dow Gardens, 1018 W. Main St., Midland, MI 48640, 517/631-2677.

Dollar Management Seminar, Executive Inn, Seattle, WA. **Aug. 21-22.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

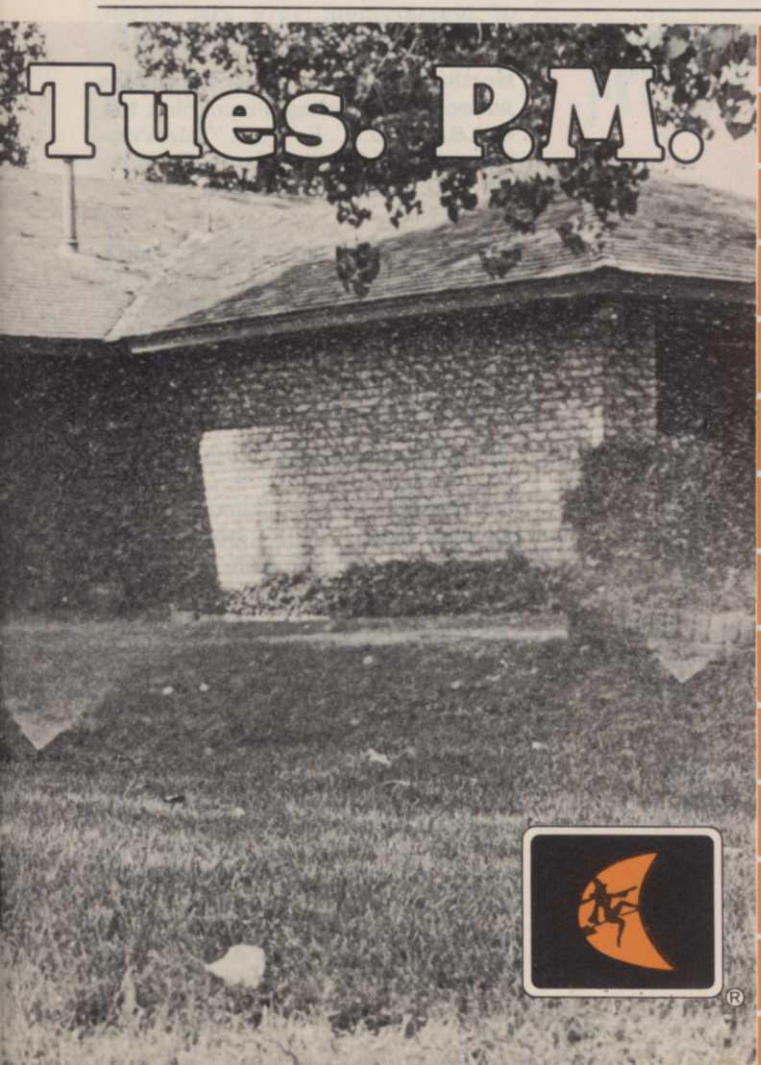
International Garden Centre Congress, Disneyland Hotel, Anaheim, CA, **Aug. 24-30.** Contact Pat Redding, GCA, 230 Southern Bldg., Washington, DC 20005.

Grower's Tour, Aug. 25. Contact Richard Staples, Program Administrator, California Association of Nurserymen, 1419 21st Street, Sacramento, CA 95814, 916/448-2881.

University of Rhode Island Turfgrass Field Day, Kingston, RI, **Aug. 26.** Contact C.R. Skogley, University of Rhode Island, Dept. of Plant Science, Woodward Hall, Kingston, RI, 02881, 401/792-2570.

Northern Michigan Turf Managers Association meeting, Gaylord, MI,

Continues on page 60



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Aug. 26. Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

Ornamentals Northwest Seminars, Oregon State University, Portland Memorial Coliseum Portland, OR, **Aug. 28-29.** Contact Dr. James L. Green, Oregon State University, Dept. of Horticulture, Corvallis, Oregon 97331, 503/754-3464.

ILD Interior Landscape Conference, Hyatt Hotel, Atlanta, GA, **Sept. 9-12.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Garden Industry of America Conference & Trade Show, Pittsburgh Convention/Exposition Center, Pittsburgh, PA, **Sept. 10-12.** Contact GIA, Box 1092, Minneapolis, MN 55440.

Alabama's Annual Turfgrass Conference, Auburn, AL, **Sept. 14-15.** Contact K. M. Sheffer, Extension Hall, Auburn University, AL 36849, 205/826-4985.

Tree Foreman Training, Kent, Ohio, **Sept. 14-25.** Contact Richard Abbott, Davey Environmental Services, 117 S. Water St., Kent, OH 44240, (216) 673-9511.

Northern Michigan Turf Managers Association meeting, Acme, MI, **Sept. 15.** Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

National Lawn and Garden Distributors Association annual conference, Opryland Hotel, Nashville, TN, **Sept. 15-18.** Contact Nancy Irving, NLCDA, 1900 Arch St., Philadelphia, PA 19103, 215/564-3484.

Virginia Tech Turfgrass Field Days, Blacksburg, VA, **Sept. 15-17.** Contact Dr. John Hall, 421 Smyth Hall, Virginia Tech, Blacksburg, VA 24061, 703/961-5797.

Management Information System Seminar, Los Angeles, CA, **Sept. 16-17.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Management Information System Seminar, Executive Inn, Seattle, WA, **Sept. 18-19.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Pacific Horticultural Trade Show, Long Beach Convention Center, Long Beach, CA, **Sept. 23-25.** Contact Lanny E. Walker, California Association of Nurserymen, 1419 - 21st Street, Sacramento, CA 95814, 916/448-2881.

Northwest Turfgrass Conference, Olympia, WA, **Sept. 28-Oct. 1.** Contact Dr. Roy L. Goss, Northwest Turfgrass Association, Western Washington Research and Extension Center, Puyallup, WA 98371, 206/593-8513.

Central Coast Turf Day, California Polytechnic State University, San Luis Obispo, CA, **Oct. 1.** Contact Ronald D. Regan, Head, Ornamental Horticulture Department, CPSU, San Luis Obispo, CA 93407, 805/546-0111.

Horticultural Tour to China, Oct. 5-18. Contact Lanny E. Walker, Public Relations Director, California Association of Nurserymen, 1419 21st Street, Sacramento, CA 95814, 916/448-2881.

Northern Michigan Turf Managers Association meeting, Pinconning, MI, **Oct. 6.** Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

Central Plains Turf Foundation/Kansas State University Turf Conference, Manhattan, KS, **Oct. 6-8.** Contact Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters Hall, Manhattan, KS 66506, 913/532-6170.

1981 Chemlawn Turf Symposium, Oct. 14-15. Contact Dr. B. G. Joyner, Plant Diagnostic Lab, Chemlawn Corporation, 6969 Worthington-Galena Road, Suite L, Worthington, OH 43085.

Southern California Turfgrass/Landscape Equipment & Material Educational Exposition, Costa Mesa, CA, **Oct. 14-15.** Contact Ed McNeill, Southern California Turfgrass Council, 1000 Concha Street, Altadena, CA 91001, 213/798-1715.

Southwest Turfgrass Association Annual Conference, Albuquerque, NM, **Oct. 15-16.** Contact Arden Baltensperger, Southwest Turfgrass Association, New Mexico State University, Agronomy Dept., Box 3-Q, Las Cruces, NM 88003, 505/646-3138.

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Browned out turf on irrigated fairway. Time - July Problem poor distribution of plain water.

Same Fairway 3 weeks after Aqua-Gro treatment. Same irrigation schedule no additional rainfall.

Aqua-Gro eliminates localized dry spots • Reduces hand watering and syringing • Reduces compaction, erosion and washout areas • Enhances drainage after summer storms, reducing closed days • Saves watering time and money • Maintains deep roots • Controls moisture in upper leaf canopy reducing chances for disease.

AQUA-GRO is available in liquid concentrate or spreadable granular. For free illustrated brochure call toll free 800-257-7797 or write to;

AQUATROLS CORPORATION OF AMERICA, INC.

1432 Union Ave., Pennsauken, New Jersey 08110 (609) 665-1130

Circle No. 106 on Reader Inquiry Card

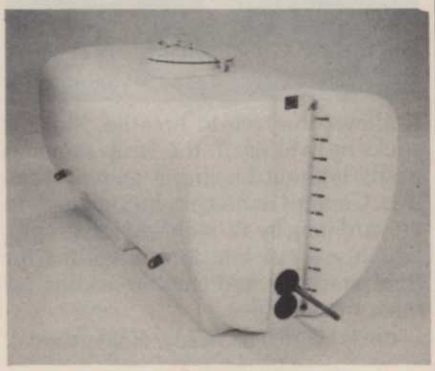
PRODUCTS

Turf Shaper by Lely breaks compacted soil, cultivates, smooths, grooves, and seeds in one pass. The device lowers equipment and labor costs by consolidating many tasks into one piece of

equipment. A 60-inch and 80-inch model are available for attachment to tractor PTO with horsepower ranging from 30 to 55. The Turf Shaper works the soil to a depth of six inches. More than one acre can be prepared and seeded in less than one hour.

Circle No. 144 on Reader Inquiry Card

Smaller tank for added spray capability of specialty chemicals has been added to the Tuflex line of fiberglass spray tanks. The 500-gallon tank is sim-



ilar to larger models and includes vented cover, baffling system, drain, calibrated sight tubes, and molded mounting base. The unit is 81-in. long, 60-in. wide, and 48-in. high.

Circle No. 145 on Reader Inquiry Card

Broadcaster models of 8 to 156 cubic feet capacity are rugged enough for

topdressing, lime and fertilizers. Spreading patterns reach 52 feet in width and include side or rear delivery. Units can be attached to three-point hitch for PTO drive. Can double as salt spreader in winter.

Circle No. 146 on Reader Inquiry Card

Systemic fungicide, Bayleton 25% Wettable Powder, controls and prevents several fungus diseases affecting turf, including brown patch, copper spot, dollar spot, powdery mildew, red thread, rusts, striped smut, fusarium blight, and gray and pink snowmold. The specified dosage should be mixed in 2 to 4 gallons of spray per 1000 square feet, and applied at the preventative rate at 7 to 21 day intervals as needed.

Circle No. 147 on Reader Inquiry Card

A mower from the Sensation Corporation, the 11L2-0, is powered by a two-

cycle Kawasaki engine. This 4.3-hp engine has a cast iron cylinder sleeve, and positive engine lubrication allows mowing of slopes. The high-strength mag-aluminum alloy deck rides on semi-pneumatic tires with heavy duty,

Continues on page 62

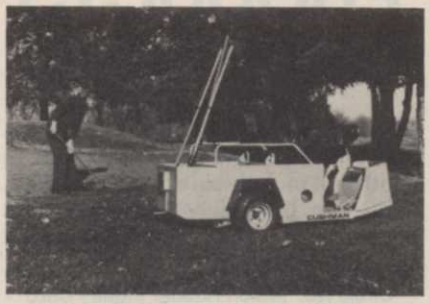
Does leaf-tip shredding make your turf brown?

Switch to fine-leafed Pennfine Perennial Ryegrass. Bred for softer fibers that take a smooth, clean cut, Pennfine has set the standard for mowability against which other ryegrasses are compared. Get Pennfine, the most widely used fine-leafed perennial ryegrass. It's available just about everywhere. Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, MN 55440

Circle No. 131 on Reader Inquiry Card

replaceable ball bearings. A non-clog suction lift blade cuts a 21-inch swath from 1 inch to 3 inches in height in ¼-inch increments. The model 90J9 grass catcher is available as an option.

Circle No. 148 on Reader Inquiry Card



A personnel and tool transport for use on golf courses, large parks, and in other turf-care situations, the gasoline-powered Turfcart, has been introduced by Cushman Turf/OMC Lincoln division of Outboard Marine Corp. It provides an all-around transport for maintenance men, irrigation crews, and supervisory personnel. The steel-plated three-wheeler can attain speeds of 14 mph.

Circle No. 149 on Reader Inquiry Card

mott HAMMER KNIFE

Flail Mowers can cut your TURF CARE COSTS

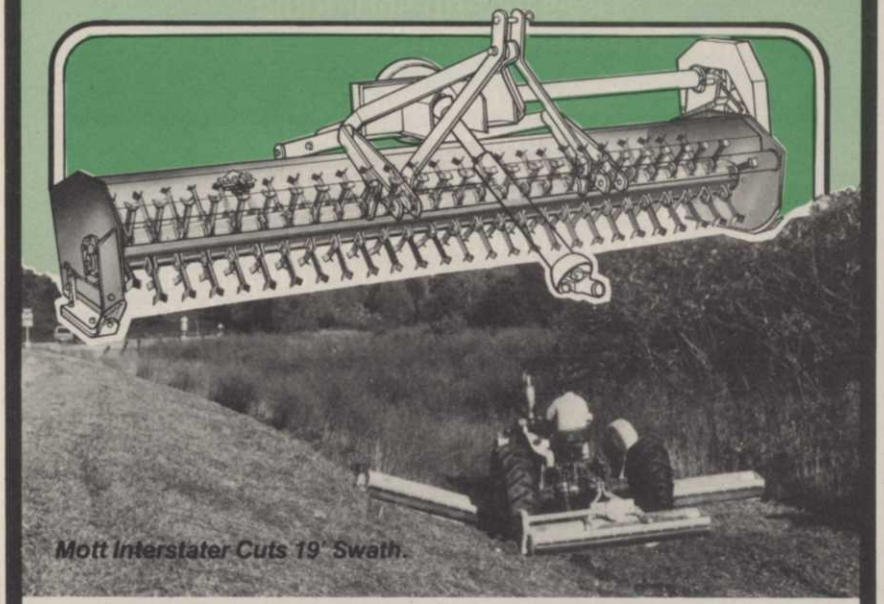
Mott Flail Mowers reflect extra value through greater versatility, added production with longer trouble-free life, and safer operation.

No other mowing system is as versatile as the flail. With only one mower investment, you can trim fine lawns, shred tough weeds, mulch, renovate, dethatch and scalp. You can work any area that is smooth or rough, clean or trashy, level or steeply banked, dry or "liquid wet". And you can operate with much greater safety than with rotary mowers.

Mott Flail Mowers are built to last and can be used with most tractors. Models are available in widths from 38 to 88 inches. In combination, they will handle up to 19 foot swaths.

Contact us today and discover how the extra value of Mott Flails can pay off by cutting your turf care costs.

MOW LAWNS ■ RENOVATE ■ MULCH LEAVES ■ SHRED WEEDS



mott HAMMER KNIFE

MOTT CORPORATION 514 Shawmut Avenue
P.O. Box 518, LaGrange, IL 60525 (312) 354-7220

Circle No. 128 on Reader Inquiry Card

A self-adhering tape, Guard-Tex Tree-Wrap, protects newly planted trees from the elements, gnawing animals, dogs, and insects. It weathers well, becoming as stiff as buckram, but

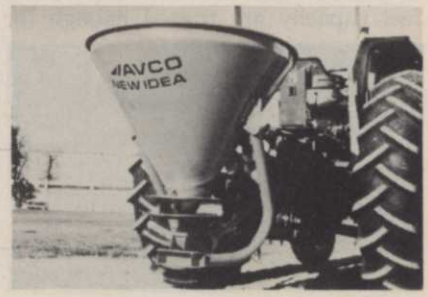
it allows the tree to breathe. Since it sticks only to itself, the wrap removes easily without leaving a gummy residue. General Bandages, Inc. makes it in 30-yard long by 12-inch wide packages, which are cut into 3-inch widths for tree wrapping and smaller widths for other nursery uses.

Circle No. 150 on Reader Inquiry Card

Low cost spinner spreader model 107 from Avco New Ideas offers comparable performance to larger models at the cost of a single spinner unit.

Model 107 has a 10.5 cubic foot capacity seamless, stainless steel hopper

Continues on page 65



that holds 690 pounds of fertilizer or 8.5 bushels of seed. The 107 spreads up to 32.8 feet from 10 shutter settings, and has a material agitator which insures uniform feeding of materials.

Circle No. 151 on Reader Inquiry Card

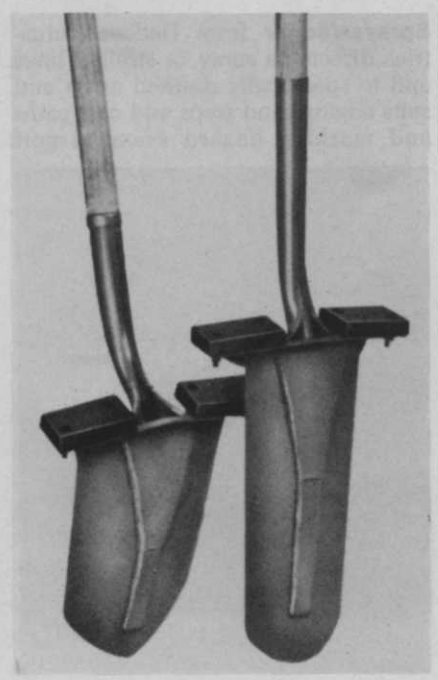
Mor-Bell Logger is a productive, versatile, low cost logging machine. The single unit will load or unload pulpwood and saw logs, skid log length or tree length, pre-bunch shortwood

and sort saw logs on a landing or in a yard.

Two hydrostatically driven wheels in addition to its compact size and low ground pressures make it well suited for thinnings. The logger is manufactured by Morbark Industries, Inc.

Circle No. 152 on Reader Inquiry Card

Shovels with big, padded foot surfaces and reinforced or metal handles are



offered by International Reforestation Suppliers. These shovels are especially suitable for forest workers.

Circle No. 153 on Reader Inquiry Card

The H-650 aquatic weed harvester, a three-unit system, does complete harvesting and disposal of aquatic weeds. It consists of the H-650 Harvester, the

Continues on page 66

INTERNATIONAL SOCIETY OF ARBORICULTURE

(formerly International Shade Tree Conference)

FIFTY-SEVENTH ANNUAL CONFERENCE

Boyne Mountain Lodge, Boyne Falls, Michigan

August 9-12, 1981

EXHIBITION AND DEMONSTRATION OF TREE PRESERVATION EQUIPMENT TOOLS and MATERIALS

Address communications to E.C. Bundy, Executive Director
International Society of Arboriculture
P.O. Box 71, Urbana, Illinois 61801
Tel. AC (217) 328-2032

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Adjust The Arm Spring With A Screwdriver Even While Our K Series Sprinkler Is Operating.

- Accurate, time-saving arm spring adjustment feature
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ZIP _____ PHONE _____

Circle No. 138 on Reader Inquiry Card

T-650 Transport, and the S-650 Shore Conveyor. The harvester cuts an 8-foot-wide swath of aquatic weeds to a depth of 5 feet and operates in 18 inches of water. When the 650-cubic foot hold is full, the load is transferred to the transport by a high-speed conveyor. At shore, the transport unloads the weeds to the shore conveyor. Aquamarine Corp. makes the equipment.

Circle No. 154 on Reader Inquiry Card

A lawn mower by Toro uses monofilament lines, eliminating the need for a steel blade. The 20-inch electric lawn mower/trimmer cuts open grass areas and trims around stationary objects.

The cutting mechanism consists of two counter-rotating discs powered by separate heavy-duty electric motors. Two monofilament lines attached to each disc are advanced and trimmed to proper length as they wear down.

Circle No. 155 on Reader Inquiry Card

Bent Special, a Nutriculture formula designed for bent grasses, has been introduced by Plant Marvel Laboratories, Inc. The 28-8-28 formula, when used on a weekly basis, replaces the nitrogen-phosphorus-potash as well as other nutrient elements removed from the soil by bentgrasses. Each application adds ¼ pound of actual nitrogen to the soil along with other vital elements such as chelated iron and manganese, with no fear of burning.

Circle No. 156 on Reader Inquiry Card

Subsurface tree fertilization system, Root App, combines the drive power of an electric impact hammer and the pumping power of a twin piston pump. It uses fluid fertilizer which can be

formulated with slow-release, long feeding nutrients or completely soluble, immediately available nutrients. One person can break through frozen ground, hard pan, or rocky soil in seconds. Applied Imagination makes it.

Circle No. 157 on Reader Inquiry Card

Falcon tall fescue is a leafy, moderately low growing, turftype variety that performs well under little maintenance. Mature stands suit areas where wear tolerance is required, which makes it useful for both home lawns and play areas such as parks and athletic fields. It provides quick germination and seedling development in a soil pH range of 4.5 to 8.0. E.F. Burlingham & Sons is marketing Falcon.

Circle No. 158 on Reader Inquiry Card

Sprayer/edger from Dedoes Industries directs its spray in straight lines and to specifically defined areas and suits edging sand traps and cart paths and marking hazard areas at golf

courses. The lightweight, portable sprayer has many commercial and residential uses.

The polyethelene tank has a spray control lever on the handle. Corrosion-resistant brass or stainless steel nozzle and fittings have changeable tips for specific applications.

Circle No. 159 on Reader Inquiry Card

Water broom from Distributor Sales attaches to a ¾-inch hose and cleans driveways, patios, and sidewalks faster than a conventional broom or hose

alone. It comes with either a 42-inch swatch (7-jet) or a 30-inch swath (5-jet). Made with an all-steel base tube and flow pipe, the water broom rests on ball-bearing, 2-inch neoprene swivel wheels and has a brass on-off switch at hand level.

Circle No. 160 on Reader Inquiry Card

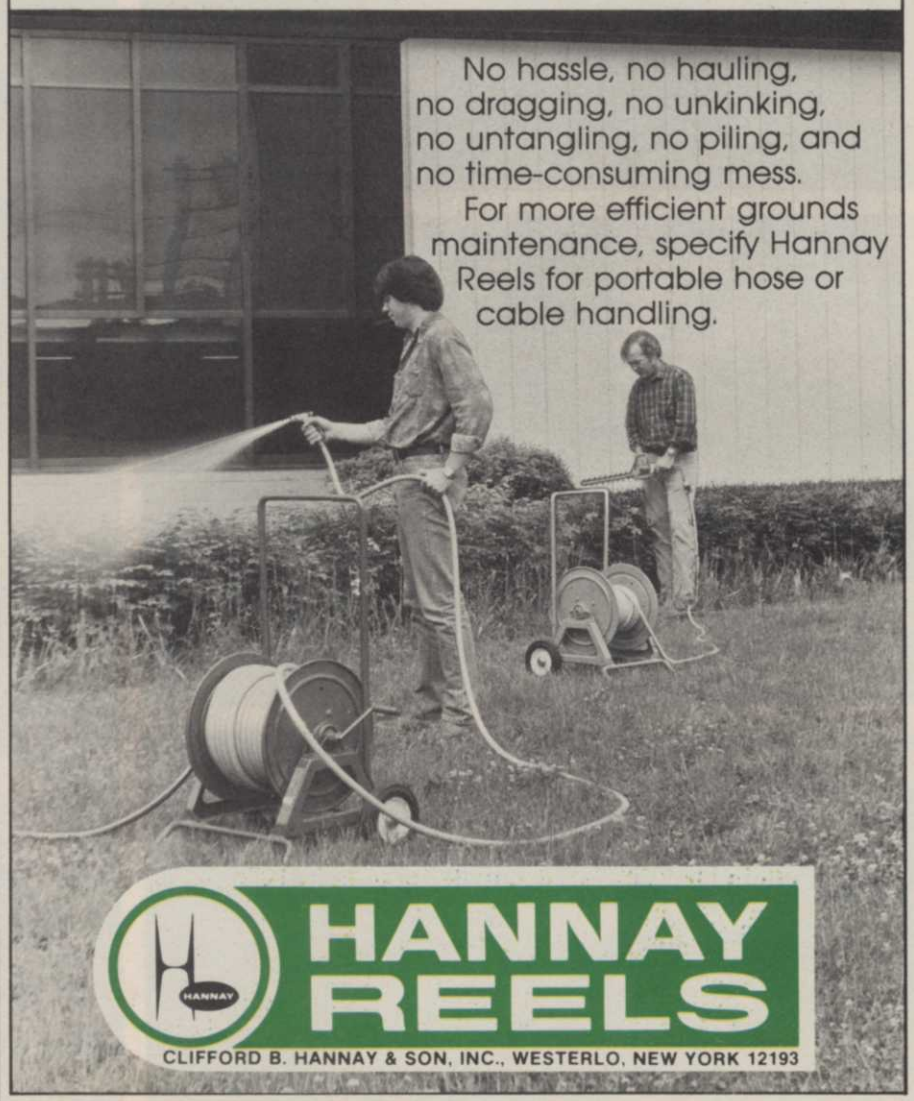
Two power harrows, the SE601 20-foot and SE751 25-foot models, join the line of seedbed preparation equipment built by Vicon Farm Machinery, Inc. Tine bars with hardened steel, replaceable tines level the ground and work up the seedbed without turning over the soil. This leaves cool, wet soil below the surface for good germination. Both models fit most CAT II or III quick-release hitches. They can be driven with 1000 rpm, 135-hp tractors at four to eight miles per hour.

Circle No. 161 on Reader Inquiry Card

PORTABLE REELS FOR

WATERING,
SPRAYING,
FERTILIZING,
CLIPPING,
EDGING,
TRIMMING,

Hannay Reels on Wheels take hose or power cable straight to the job and back.



Circle No. 115 on Reader Inquiry Card

Drive disease off fairways too, with Daconil 2787.®

Daconil 2787 Flowable Fungicide is the product of choice on tees and greens because it controls more diseases than any other turf fungicide. And in 12 years of continuous use, resistance has never been reported.

You can count on it to perform on fairways, too. To help you achieve a longer, more profitable playing season. A better looking course. More enjoyable play. Plus a better return on course investments already made.

Daconil 2787 controls such turf ravaging diseases as dollar spot, leaf spot, red thread and large brown patch on fairways. Its proven residual effectiveness at recommended application rates, plus the fact Daconil 2787 has a built in surfactant, makes it economical to use.

The 500 formulation of Daconil 2787, introduced in 1978, gives you the additional advantage of fast, easy handling because it flows readily and disperses quickly.

When it comes to disease control, make Daconil 2787 your fungicide from tee to green. Use it on labeled ornamentals around the club house, too. It'll keep your course fit for the masters.

Diamond Shamrock

AGRICULTURAL CHEMICALS DIVISION
1100 Superior Avenue
Cleveland, Ohio 44114

Always follow label directions carefully when using turf chemicals.

Circle No. 111 on Reader Inquiry Card

WT&T CLASSIFIEDS

RATES: 70 cents per word (minimum charge, $15). Bold face words or words in all capital letters charged at 80¢ per word. Boxed or display ads charged at $60 per column inch (one inch minimum). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Anderson, WEEDS, TREES & TURF, 1 East First Street, Duluth, MN 55802.

BOX NUMBER REPLIES: Mail Box number replies to: WEEDS, TREES & TURF, Classified Ad Department, 120 W. 2nd St., Duluth, MN 55802. Please include box number in address.

HELP WANTED

HORTICULTURIST, ANCHORAGE ALASKA. The Municipality of Anchorage needs a Horticulturist to oversee the operation of a 20,000 sq ft 4-greenhouse complex providing 50,000 bedding plants to city-maintained gardens annually; public tropical garden display area; landscaped parks; permanent and temporary displays, shows and beautification projects; provide guidance to inquiring public; full responsibility for trees, shrubs and flowers. Minimum requirements include bachelor's degree in Horticulture or a closely related field plus three years of progressively responsible greenhouse-related horticultural experience, one year of which must have been in a supervisory capacity. Experience beyond the minimum three years may substitute for the education on a year-for-year basis. Salary $990-1265 bi-weekly DOE. Relocation allowance available. For more information, please submit your resume to Steven F. Williams, Personnel Dept., Muni. of Anchorage, Pouch 6-650, Anchorage, AK 99502. The Municipality provides fringe benefits including paid health and life insurance, a retirement program, and six-weeks annual leave. An Equal Opportunity Employer. 7/81

LANDSCAPE GENERAL SUPERINTENDENT. Individual required to coordinate all field operations for expanding landscape contracting firm. Knowledge of scheduling, equipment utilization and large-scale public works projects required. Only those skilled in the above need call. **GRAYLAND DEVELOPMENT, INC.,** City of Industry, CA. (213) 961-9256. 7/81

BRANCH MANAGER: Chemical Lawn Care firm is accepting applications for Managerial position. Must be experienced in route and service type business, responsible for sales personnel and administration. Must be willing to relocate in Ohio, Indiana or Kentucky areas. Write WTT Box 270. 11/81

Landscape Architect/Salesperson to work the Houston market. Must have basic knowledge of Design/Build landscape contracting business. Contact: Marc Funderburk, L.D.C.-Houston, Inc., PO Box 42062, Houston, TX 77042. 7/81

INSTRUCTOR — SCHOOL OF GOLF COURSE OPERATIONS. LAKE CITY COMMUNITY COLLEGE, located in the pine forest of North Florida, is searching for an individual to teach courses in irrigation and drainage, turfgrass science, soils and other related subjects. Minimum requirement: B.S. degree in plant science field with two years experience in golf course maintenance. Practical knowledge of irrigation and drainage is necessary. Salary range $16,500 to $24,900, depending upon degrees and years of experience. Date to be filled: August 1981. Send inquiries directly to Jerry H. Cheesman, Director; School of Golf Course Operations, Lake City Community College; Rt. 7, Box 42; Lake City, FL 32055. AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER. 7/81

LANDSCAPE PROJECT MANAGER. We are actively seeking individuals with extensive experience in large-scale landscape, irrigation and site development projects. Background in public works procedures required. Top salary and benefits. **GRAYLAND DEVELOPMENT, INC.,** City of Industry, CA., (213) 961-9256. 7/81

Southwest Florida tree company looking for climbers and persons knowledgeable in all phases of the tree industry. This is a perfect opportunity for someone to start in on ground floor operations in a newly formed, fast growing business. Send resume to WTT Box 271. 7/81

CHALLENGING CAREER. Above average pay; Two year associate in applied science degree in Golf Course Operations/Landscape Technology. Financial assistance available. Write Western Texas College, Snyder, TX., 79549. (915) 573-8541. 9/81

Sales and field reps. for highest quality, well respected tree maintenance firm in North Texas. Only well groomed, aggressive knowledgeable persons need apply. Must be self starter. Contact Del Kennedy, P.O. Box 7, Granbury, Tx., 76048., (817) 477-3071. 7/81

MISCELLANEOUS

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 2705 Wingate Avenue, Akron, Ohio 44314. Call collect (216) 753-2259. 1/82

LANDSCAPE DESIGN KIT, 37 rubber symbol stamps, ink pad, $38.50 postpaid. California add $2.16 tax. Stamps kit brochures available. American Stamp Co., Box 741, Dept. WT, Reseda, California 91335. Phone (213) 881-2808. TF

START YOUR LANDSCAPING CAREER NOW! Write: School of Landscape Design and Sales, Lake City Community College, Rt. 7, Box 42, Lake City, FL 32055. Fully accredited and V.A. approved. 7/81

Increase your profits this year with "Garden Tips" the monthly customer newsletter with your company name/phone. Proven response . . . cements customer relations, gets them to spend more, opens new doors expertly in new expansion areas. Low cost, effective profit building. Call today (516) 538-6444, we'll send complete information or write: Garden Tips, Box 117, Garden City, NY 11530. TF

USED EQUIPMENT

AERIAL BUCKETS call P. C. Gould Sales Company Essex, Conn. (203) 767-1636. New and Used brush chippers, Vermeer stumpers, sprayers, Hydro-Ax's available for immediate sale. Or write P. C. Gould Sales Company, Plains Road, Essex, Conn. 06426. 8/81

HI-RANGERS AERIAL BASKETS 65', 57', and 53'. Skyworkers aerial baskets 65', 50', 40'. Vermeer stump cutter 1560, 6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers. Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. (414) 257-1555 TF

FOR SALE: 3 gang Toro Spartan Mower & frame, rubber tires, new, still in crate. No reasonable offer refused. 1977 Jacobson 70 in trimmer, excellent condition. Call (308) 262-1537 after 5 p.m. Mountain Standard Time. 7/81

BEAN SPRAYER, AJ20 Model, 200 gal. Bonded tank, 12 h.p. Kohler engine, skid-mounted, pump totally rebuilt, motor in excellent condition. Well cared for equipment. Must sell. Painted and ready to go. $1885.00. Cleves, Ohio (513) 941-1166. 7/81

1,000 gallon Toro hydro-seeder. Skid mount. Excellent running condition. 3 sections, 50 ft. hose, & 4 nozzles included. Heavy duty machine. (313) 484-3551. 7/81

Finn Straw Mulcher with asphalt applicator, powered by 4 cyl. Wisconsin engine Model VG4D. Green Valley Turf Farms Inc., Canfield, OH. (216) 533-3354. 8/81

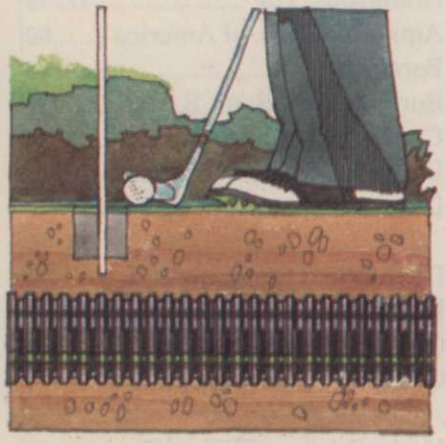
Model 10 Vermeer stump cutter with 36 hp. Wisconsin engine and cuts to 10 inches deep. Model 18 Vermeer stump cutter with 56 hp. Wisconsin engine and cuts to 24 inches deep. Both in good condition. Funk Bros., Tree Service, Inc., Ashland, Ohio. Phone (419) 325-2113. 7/81

HI-RANGER BUCKET TRUCKS, 54' and 51', Flatbed and chip box mitts - Merrill brush chipper. Allied Enterprises, Inc., W. 204 N. 11509 Goldendale Rd., Germantown, WI 53022, (414) 255-6161 anytime. TF

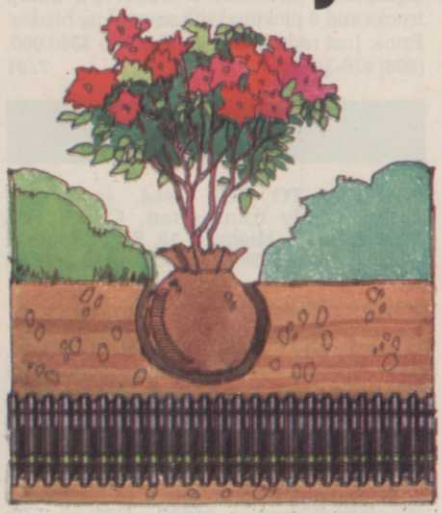
continues on page 72

ADS Drainage Tubing

It's dependably tough for your toughest turf jobs.

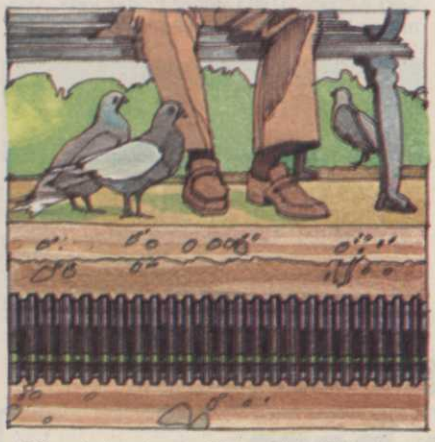


Flexible ADS drains your greens.



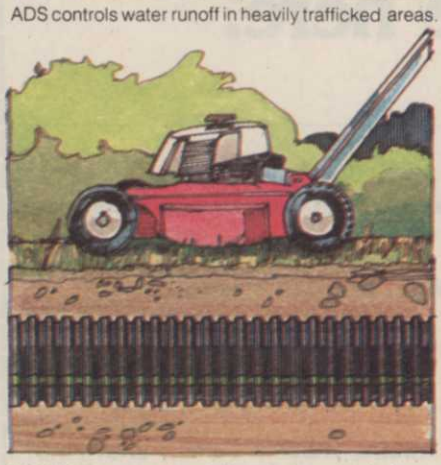
ADS helps maintain beautiful landscapes.

ADS keeps your athletic fields dry.



ADS controls water runoff in heavily trafficked areas.

Sandy soils call for ADS Drain Guard® — the nylon filter that won't block or clog.



ADS tubing — a small part of your turf care budget.

Whether you buy or sell turf care products, you want quality. That's why ADS polyethylene tubing is your best bet. For healthy soil, drainage is important. Strong and durable, ADS tubing provides years of trouble-free drainage, and helps maintain stable soil systems.

ADS is easy to install, requiring less labor and no heavy machinery. A flexible tubing, it follows ground contours and adapts to underground obstacles. And, ADS tubing won't rot, rust or break down during handling or backfilling. A full line of accessory fittings and couplings help simplify even the most challenging installations.

At a cost of just pennies per foot, ADS means quality AND value.

This season rely on ADS drainage tubing. You deserve the best.

SPECIFICATIONS

ASTM F-405, Standard Specification for Corrugated Polyethylene Tubing and Fittings. **SCS,** National Engineering Standard, Code 606. **ASTM F-667,** Standard Specification for 10", 12" and 15" Corrugated Polyethylene Tubing.

Look for the ADS green stripe

It's your sign of quality — #1 in the land.

Circle No. 102 on Reader Inquiry Card

ADS®

ADVANCED DRAINAGE SYSTEMS, INC.

Corporate Office
3300 Riverside Drive
Columbus, Ohio 43221
(614) 457-3051

For additional product and technical information, contact your nearest ADS sales office.

To serve your drainage needs, ADS operates 21 manufacturing plants nationwide, and the eight regional sales offices listed below:

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Iowa City, IA	319-338-3689
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Monticello, IL	217-762-9448
Atlanta, GA	404-393-0602
Napoleon, OH	419-599-0585
Livermore, KY	502-733-4324
Palmer, MA	413-283-9797

Classifieds *from page 70*

TREE TRANSPLANTING EQUIPMENT new & used, financing available. For list, write or call: Turf & Tree Supplies, Box 291, Rockton, IL., 61072. (815) 624-7578. 7/81

For Sale. Brouwer Sod Harvester mounted on Moline tractor. Hadfield automatic sod pick-up and loading conveyor. Ryan sod cutters. All in A-1. (513) 424-5722. 8/81

7 gang Jacobsen Fairway Mowers with hydraulicly powered reels, 1 year old, excellent condition. Mizu Fumigator, 10 ft., new 1980, never used. John Deere 2040 Tractor, front end loader and detachable backhoe, 2 years old, excellent condition. Floriturf, Inc., Kissimmee, Fl. (305) 348-5906. 8/81

FOR SALE

For Sale, Established Tree Service Business ♥ Southern Calif. 30 years. Two Skyworker trucks, one 65' Alpine and one 45'. Two chipper trucks, One 1980 Cheve diesel truck with 18' dump box, Two Asplundh chippers, Two Vermeer Stump Grinders, One Vermeer Root Cutter and trailer, One 4000 Ford Diesel Tractor and trailer, all Chain Saws and small tools, Welders, Air Compressor etc. All equipment in excellent condition. Price includes 2 acre equipment yard plus 2,100 Sq. Ft. home. Price $700,000, Gross $400,000 in 1980. Write, Bill Potts, P.O. Box 1929, Pomona, Calif. 91766. 7/81

New Burlap bags 18" × 24" $.65 each, min order of 100. Order from Sales Agent, 1109 Maple Avenue, Hollidaysburg, PA 16648. 7/81

HYDRO-MULCHERS AND STRAW BLOWERS. New and used. Southwest Hydro Mulchers, 13220 Jupiter Road, Dallas, TX 75238. 214-840-2440. 7/81

COLORADO NURSERY: Located outside of Vail, Colorado, this 10 year established business has snowplowing in the winter, nursery and landscaping in the summer. Sales ½ million with huge growth potential. Equipment includes 3 loaders, 2 dump trucks and 8 pickups with snowplow blades. Price: Just reduced by $100,000 to $350,000. (303) 476-3074. 7/81

WANTED

WANTED TO BUY used, small, sod cutter, easily transported. CREATIVE LANDSCAPE, Highway 15, Rural Route 5, Mexico, MO., 65265. (314) 581-0118 or (314) 581-5436. 7/81

Wanted: Used Stainless Steel Combines, that aerates, rolls, sprays liquid, as formerly used by Lawn-A-Mat dealers. Write: Conestoga Golf & Country Club., Conestogo, Ontario N0B 1N0 or call 1-(519) 664-2234. 9/81

Wanted—Vermeer 2460A, C60 or C70 Chevy, or GMC with a GM fuel pincher. Carl Kopocs, 3190 Cooper Foster Park, Vermilion, OH 44089. (216) 988-4478.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15553 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

send a message...
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